

## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.



WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION

ANNUAL REPORT FOR 1946

U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

AUG 9 1967

CURRENT SERIAL RECORDS

*Pg 1412*

2.  
80.  
United States Department of Agriculture  
Agricultural Research Administration  
Bureau of Entomology and Plant Quarantine  
Division of Plant Disease Control  
206 Federal Building  
Cambridge 39, Massachusetts









INDEX TO ANNUAL REPORT OF BLISTER RUST CONTROLACTIVITIES AND ACCOMPLISHMENTS IN NORTHEASTERN REGION DURING 1946

	<u>Page</u>
FOREWORD .....	1
<b>I - GENERAL STATEMENT .....</b>	<b>2-10</b>
Control Problem .....	2
Importance of White Pine .....	2-5
Pine Infection Conditions .....	6-7
Highlights of 1946 Control Activities .....	7-8
Status of Control Area Mapping .....	8
Status of Ribes Eradication Work .....	8-10
<b>II - LEADERSHIP, COORDINATION AND TECHNICAL DIRECTION OF WHITE PINE</b>	
BLISTER RUST CONTROL - WORK PROJECT BLR-1-1 .....	11-19
General Statement .....	11-12
Personnel .....	12-14
Informational and Service Activities .....	15-17
Cooperation With Other Government Agencies .....	18
Bond Purchases By Permanent Personnel .....	18
Financial Statement .....	19
<b>III - COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED</b>	
LANDS - WORK PROJECT BLR-3-1 .....	20-39
General Statement .....	20
State and Local Cooperation .....	20-21
Control Area Examination and Mapping Work .....	22
Use of Aerial Photographs on Mapping Work .....	23
Ribes Eradication Work During 1946 .....	24-30
Checking of 1946 Ribes Eradication Work .....	30-32
Transportation of Workers.....	33
Injuries to Temporary Federal Employees .....	33-34
State Compensation For Cultivated Ribes Destroyed .....	34
Nursery Sanitation .....	34-35
Blister Rust Canker Elimination Work .....	35
Status of Control Work on State and Privately-Owned Lands .....	35-36
Future Control Work on State and Privately-Owned Lands .....	36-37
Financial Statements .....	37-39
<b>IV - BLISTER RUST CONTROL WORK ON NATIONAL FORESTS -</b>	
FINANCIAL PROJECT BLR-4 .....	40-46
General Statement .....	40
Ribes Eradication Work During Calendar Year 1946 .....	40-42
Expenditures From Fiscal Year 1947 Allotments .....	42
Recommendations For Control Work During Calendar Year 1947.....	43-44
Status of Ribes Eradication Work, December 31, 1946 .....	44
Ribes Eradication Work, 1924-1946, Inclusive .....	45
Financial Statement .....	46

V - BLISTER RUST CONTROL WORK ON NATIONAL PARKS -	<u>Page</u>
FINANCIAL PROJECT BLP-5 .....	47-51
General Statement .....	47
Ribes Eradication Work During Calendar Year 1946 .....	47
Blister Rust Canker Elimination Work During 1946 .....	48
Expenditures During Calendar Year 1946 .....	48-49
Status of Ribes Eradication Work, December 31, 1946 .....	49
Recommendations For Future Control Work .....	49-50
Ribes Eradication Work, 1929-1946, Inclusive .....	51
Blister Rust Canker Elimination Work, 1932-1946 .....	51
Financial Statement .....	51
VI - APPENDIX .....	52-74



WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION  
ANNUAL REPORT FOR 1946

FOREWORD

Part I of this report is a general statement outlining the control problem and the importance of white pine in the region, distribution and spread of the rust, highlights of the 1946 control accomplishments, and the present status of various phases of the control program.

Activities and accomplishments under the various financial and work projects are summarized in Parts II to V, inclusive, as follows:

Work Project BLR-1-1: Leadership, Coordination and Technical Direction of All White Pine Blister Rust Control in Northeastern Region.

Work Project BLR-3-1: Cooperative Blister Rust Control on State and Privately-Owned Lands in Northeastern Region.

Financial Project BLR-4: Blister Rust Control on National Forests.

Financial Project BLR-5: Blister Rust Control on National Parks.

The Appendix includes statistical summaries of accomplishments during 1946, accumulative results for all years, and detailed information on the current status of various phases of control work such as ribes eradication, control area mapping, nursery sanitation, and Ribes nigrum elimination.



PART I  
GENERAL STATEMENT

Control Problem

Blister rust control is an integral part of the protective measures that are imperative to the preservation of white pine as an essential natural resource of the region. Under the present program in the Northeast, control is being conducted on a permanent control area of 12,182,144 acres, which includes 4,187,532 acres of white pine meeting stocking requirements based on an expectancy of at least 50 crop trees per acre at maturity. In addition, thousands of acres of merchantable white pine have been discontinued from the control area because little pine reproduction was present or expected on these areas and appreciable damage from blister rust should not occur prior to logging. Many of these areas have been logged during recent years and may revert to active control status if they restock adequately to white pine. There are also several hundred thousand acres of white pine which were never included or have been discontinued from the control area due to insufficient white pine stocking, poor quality, excessive cost of control, too much infection, or because the total amount of pine in a township was not sufficient to justify public expenditures for control work.

During the war period, blister rust control activities in this region were adjusted to meet emergency conditions. A holding program was adopted, the chief objective being to maintain control on as many of the protected areas as possible with the limited manpower available.

The magnitude of the control problem in this region has been greatly increased by the white pine and ribes regrowth in areas affected by the 1938 hurricane and the greatly accelerated logging of white pine since that time to meet war and post-war demands. It is estimated that over 6,000,000,000 board feet of white pine lumber was produced in the Northeastern States during the period 1939-1946, inclusive. On the basis of an average of 5,000 board feet of lumber per acre, a figure ascertained to be representative in New Hampshire, approximately 1,200,000 acres of white pine have been logged during the past eight years. This represents over one fifth of the total white pine acreage in the region. Most of the areas which have been logged since 1938 are in the control area and had been protected previously. It is now necessary to re-examine the disturbed areas to determine the amount and extent of regeneration of white pine and ribes. Assuming that one million acres of white pine have been cut in the control area and allowing for protection zones, nearly three million acres will have to be examined. Indications are that most of the affected areas are restocking adequately to white pine and in many of them a dangerous amount of ribes regrowth has occurred. Timely action must be taken to protect the valuable young pine growth in these cut-over areas from destruction by the rust.

Importance of White Pine

The botanical range of white pine includes the entire Northeastern Region, but there are relatively large sections, especially in northern and eastern Maine, the northwestern portion of New York, most of New Jersey, and several counties in Pennsylvania, which are not included in the blister rust control area (see map



on Page 10 ) because of the scattered distribution of white pine. It is estimated that the total white pine forests in the region comprise approximately five and a quarter million acres, over 99.8% being in state and private ownership, chiefly farm woodlots.

In addition to being the most valuable softwood timber species, eastern white pine is also very important from a scenic and recreational viewpoint as it adds immeasurably to the attractiveness of this region where the tourist business is one of the chief sources of income in many localities. White pine also has a high value for watershed protection and has been planted extensively for that purpose as well as commercial reforestation.

During the 12-year period from 1927-1938, inclusive, the annual production of white pine lumber in the Northeastern States was 277,014,000 board feet. Due to the 1938 hurricane and the greatly increased demands to meet urgent war and post-war requirements, production rose to an average of 457,548,000 board feet during 1939 to 1941 and since that time has averaged 325,614,000 board feet annually, based on data obtained from the Bureau of Census and U.S. Forest Service. These figures are conservative since they represent only the pine which was cut for lumber. The data also do not include small amounts of pine cut by thousands of farmers primarily for their own use, and a large volume of pine used for pulp, wall board, etc. Table 1 gives information on the white pine lumber production in each of the Northeastern States during the period 1939-1949, inclusive.

Table 1 - White Pine Lumber Production in Northeastern Region During Period 1939-1946, Inclusive  
(In M Board Feet)

State	1939	1940	1941	1942	1943	1944	1945	1946	Total	Average Per Year
Maine	104,705	131,294	202,089	256,547	186,633	225,723	313,641	519,646	2,010,276	251,285
N.H.	137,405	133,342	246,643	277,927	319,612	288,896	305,663	350,537	2,060,025	257,503
Vt.	18,594	14,966	35,351	44,366	44,816	77,996	50,869	76,232	363,190	45,399
Mass.	52,866	50,778	80,299	69,241	65,999	69,984	55,598	66,562	511,327	63,916
R.I.	4,896	5,637	6,888	4,376	2,764	2,637	1,335	905	29,438	3,680
Conn.	9,416	3,582	4,679	4,850	6,522	8,804	8,389	8,719	54,961	6,870
N.Y.	15,782	18,644	42,818	81,172	74,057	118,949	108,349	237,711	697,482	87,185
N.J.	303	203	301	358	317	201	1,133	2,580	5,396	674
Penns.	15,249	12,260	23,654	38,713	34,698	42,594	31,597	69,851	268,616	33,577
All States	359,216	370,706	642,722	777,550	735,418	905,784	876,574	1,332,743	6,000,713	750,089

Data for years 1939-1944, inclusive, obtained from U.S. Bureau of Census bulletin - data for 1945 and 1946 are estimated furnished by Northeastern Forest Experiment Station of U.S. Forest Service and were based on sampling sawmill production by mill size classes in such a manner as to provide approximately a 10 percent sample of the known mill population with proportionately heavier sampling in the larger mill size classes.





LARGEST WHITE PINE IN MAINE?

Located on property of Mr. Sanborn in the town of Baldwin, Maine. Tree is 4 feet and 7 inches D.B.H. and is believed to be the largest white pine in the State of Maine.





## Pine Infection Conditions

Blister rust has been generally distributed on white pine throughout the Northeastern Region for many years having spread from scattered plantings of infected white pine stock imported from Europe prior to the application of quarantine and control measures. The amount of pine infection varies considerably in different localities, and has been influenced by such factors as the location of original infection centers; distribution and amount of native pine; abundance and species of ribes; topography; weather conditions; and application of control measures. Infection on white pine ranges from none in some stands to nearly 100% in others. Over extensive areas from 1 to 20% of the trees have been infected, and in scattered local tracts from 30 to 90% of the trees are diseased, but nearly all of this infection took place before the affected areas were cleared of ribes. Pine infection is most severe in Warren and Essex Counties in New York, the upper Connecticut River Valley in New Hampshire and Vermont, and in most pine sections of Maine outside of York and Cumberland Counties.

Ribes eradication has been progressively extended within the white pine area since 1918. Control of the disease has been established and maintained on those parts of the protected areas on which these bushes have been either eliminated or so reduced in numbers and size that they are not a serious hazard to the pines. Initial eradication has been performed on over 83% of the control area, over 41% has been worked twice, and nearly 7% three times. This protection work has had a decided effect in checking the spread of the disease. The spread of the rust has continued in unprotected areas and in those parts of the protected areas where the ribes have not been kept thoroughly suppressed due to unavoidable delays in scheduled reworkings and to logging and other disturbances in the forest cover that result in the germination of viable seed in the soil. It is estimated that over a million acres of white pine have been logged in the control area since 1938.

Most of the younger pines infected prior to initial control work have been killed by the rust and gradually disappeared from the stands. Meanwhile damage resulting from early infection of the older and larger pines, which are killed more slowly by the disease, has become increasingly apparent. This is manifest in many stands by a growing number of dead and dying trees in the older age classes. In general, the prevailing effectiveness of the ribes eradication work in controlling the disease is shown by the relative scarcity of new pine infection and the presence of white pine reproduction free of blister rust.

No extensions of ribes or pine infection beyond their previously known range in this region were reported during 1946. However, noteworthy areas of heavy infection were located this year at Carratunk and Camden, Maine; Whitefield, New Durham and Campton, New Hampshire; Orwell, Vermont; Hannawa Falls, New York and in a few towns in the Ellenville, New York district where no control work had been performed for several years prior to 1946.



7

Weather conditions were abnormal during the spring and summer months of 1946. May was favorable for ribes infection with a precipitation of 4.91" compared with a normal of 3.18". During June the rainfall was slightly below the normal of 2.89". Infection on ribes was retarded during July as it was one of the hottest and driest months on record with a precipitation of only 1.2". August, on the other hand, was the rainiest one since 1872, the rainfall amounting to 9.92"; while in September the rainfall was 2.4" or 1.1" below normal. The favorable weather conditions for infection during August may have resulted in considerable new pine infection in areas where ribes are still present.

#### Highlights of 1946 Control Activities

Commendable results were accomplished under the holding program which was in force during the war, but the work in most states fell behind schedule and the greatly accelerated cutting of white pine further complicated the control program. In an effort to speed up the control work, increased federal funds were provided for the fiscal year 1947 while the cooperating states and other agencies also contributed larger sums during the current year. Outstanding was the New York State appropriation which was increased from \$25,000. to \$100,000. for the fiscal year 1947. Total expenditures by the states and local cooperators during the calendar year 1946 amounted to \$196,717.27 which was an increase of 50.3% over the preceding year.

Substantial progress was made during 1946 toward increasing the acreage under control and maintaining control where established in previous years. A total of 862,483 acres were cleared of 4,989,209 ribes as a result of 64,922 man days labor. All of this work was on state and private lands except 5,635 acres which were examined on the three national forests and one national park in the region. Compared with 1945, the above totals represent increases of 74% in acreage worked, 132% in ribes destroyed and 105% in man days labor. Table 2 shows the total 1946 accomplishments by operating agencies.

Table 2 - Summary of Ribes Eradication Work During 1946

Operating Agency	Acreage Worked				Ribes Destroyed	Man Days
	First	Second	Other	Total		
U.S. Forest Service	458	672	160	1,290	19,994	280
National Park Service	-	4,345	-	4,345	515	137
Bureau - Coop.	221,401	413,229	222,218	856,848	4,968,700	64,505
Totals	221,859	418,246	222,378	862,483	4,989,209	64,922



Greater use was made of aerial photographs on control area examination and mapping work during 1946, when a total of 1,137,303 acres were examined to delimit and classify control areas. In addition, a total of 390,337 acres were detail mapped. Compared with 1945, these acreages represent increases of 91.1% and 117% respectively. As a result of the examination work, the regional control area was reduced by 167,539 acres and there was an increase of 421,962 acres over the previous year in the total area classified as being on maintenance.

The environs of 9 nurseries, containing 32,993,800 white pines, were also examined for ribes in 1946.

A Division safety and health manual was compiled and distributed to all regions and a new manual was prepared for use in this region outlining procedures for mapping on aerial photographs.

#### Status of Control Area Mapping

Detail maps have been prepared for approximately 69% of the total control area comprising 12,182,144 acres. However, the majority of these maps were made during the Emergency Programs and many of the maps are now more or less obsolete due to the innumerable changes which have occurred in the forest types as a result of the 1938 hurricane and extensive logging operations since that time. The cut-over areas are being located on maps as rapidly as possible, but reliable information on pine restocking in these areas cannot be obtained for at least three years after the cuttings occurred. All of the control area in Connecticut has been detail mapped and good progress is being made in remapping the towns east of the Connecticut River which were affected by the hurricane. In Vermont, 96.4% of the control area has been mapped, but considerable remapping work is needed in the towns along the Connecticut River Valley where the hurricane damage was most severe. From 80-90% of the initial mapping work has been completed in Maine, Rhode Island, and Pennsylvania; while in the other states the percentages range from 46% in New Hampshire to 63% in New York. Many of the areas which have not been detail mapped were initially cleared of ribes prior to 1933 at which time spot maps were prepared to show the location of the white pine types and the boundaries of the control areas. There are nearly four million acres in the control area which are in need of initial detail mapping and at least half of the previously mapped areas will have to be checked to determine the changes in the pine types and the maps revised accordingly. The use of aerial photographs will speed up such activities greatly in the future.

Table 41 in the Appendix lists information on the current status of detail mapping by states and districts.

#### Status of Ribes Eradication Work

The present net control area in the Northeastern Region comprises 12,182,144 acres of which 10,762,506 acres, or 88.3%, have been given initial protection. Second work has been performed on 4,994,026 acres, or 41% of the net control area and an additional 812,270 acres have been worked three or more



times. At the end of 1946, a total of 3,302,955 acres or 27.1% of the net control area had been classified as being on maintenance. This represents a net increase of 421,962 acres in this category since 1945. There are several hundred thousand additional acres which undoubtedly could be placed on maintenance, but field inspections will be necessary before such action is taken.

The following table shows the status of the ribes eradication work by land ownership classes, while Tables 40 and 41 in the Appendix give similar information by states and districts.

Table 3 - Status of Ribes Eradication Work - December 31, 1946

Land Ownership Class	Acreage of Control Area	Acreage Worked			Acreage on Maintenance	Percentage of Control Area Worked			On Maintenance
		Once	Twice	Three Times		Once	Twice	Three Times	
State & Private	12,157,957	10,738,925	4,973,552	803,876	3,283,570	88.3	40.9	6.6	27.0
National Forests	7,315	6,709	4,858	3,415	2,513	91.7	66.4	46.7	34.3
National Park	16,872	16,872	15,616	4,979	16,872	100.0	92.6	29.5	100.0
Total	12,182,144	10,762,506	4,994,026	812,270	3,302,955	88.3	41.0	6.7	27.1

At the end of 1946, there were 1,419,638 acres still in need of initial control work in the region. Such work has been completed in Rhode Island, Connecticut and New Jersey, while only 45,062 acres still require initial work in Massachusetts. In the other states, the percentages of initial work completed range from 63.8% in Vermont to 92.8% in New Hampshire. There are 463,477 acres of initial work still to be done in New York, but this includes 229,059 acres in the western part of the state outside the present districts. All initial work has been completed at Acadia National Park and the entire control area is on a maintenance basis. There is still a small amount of initial work to be done on the three national forests in this region, but this will be performed during 1947 along with any necessary rework.

A total of 10,762,506 acres have been initially cleared of ribes, and 3,302,955 acres have been placed on maintenance. The balance of 7,459,551 acres should be examined to determine the need for rework. Of this total, it was estimated that 5,607,704 acres were in need of such examination work at the end of 1946. All of the control areas in Rhode Island and New Jersey are on a maintenance basis, while in Connecticut and Massachusetts, the percentages are 99.5% and 56.5%, respectively. In the other states, from 13.9% to 21.6% of the control areas are now on maintenance.

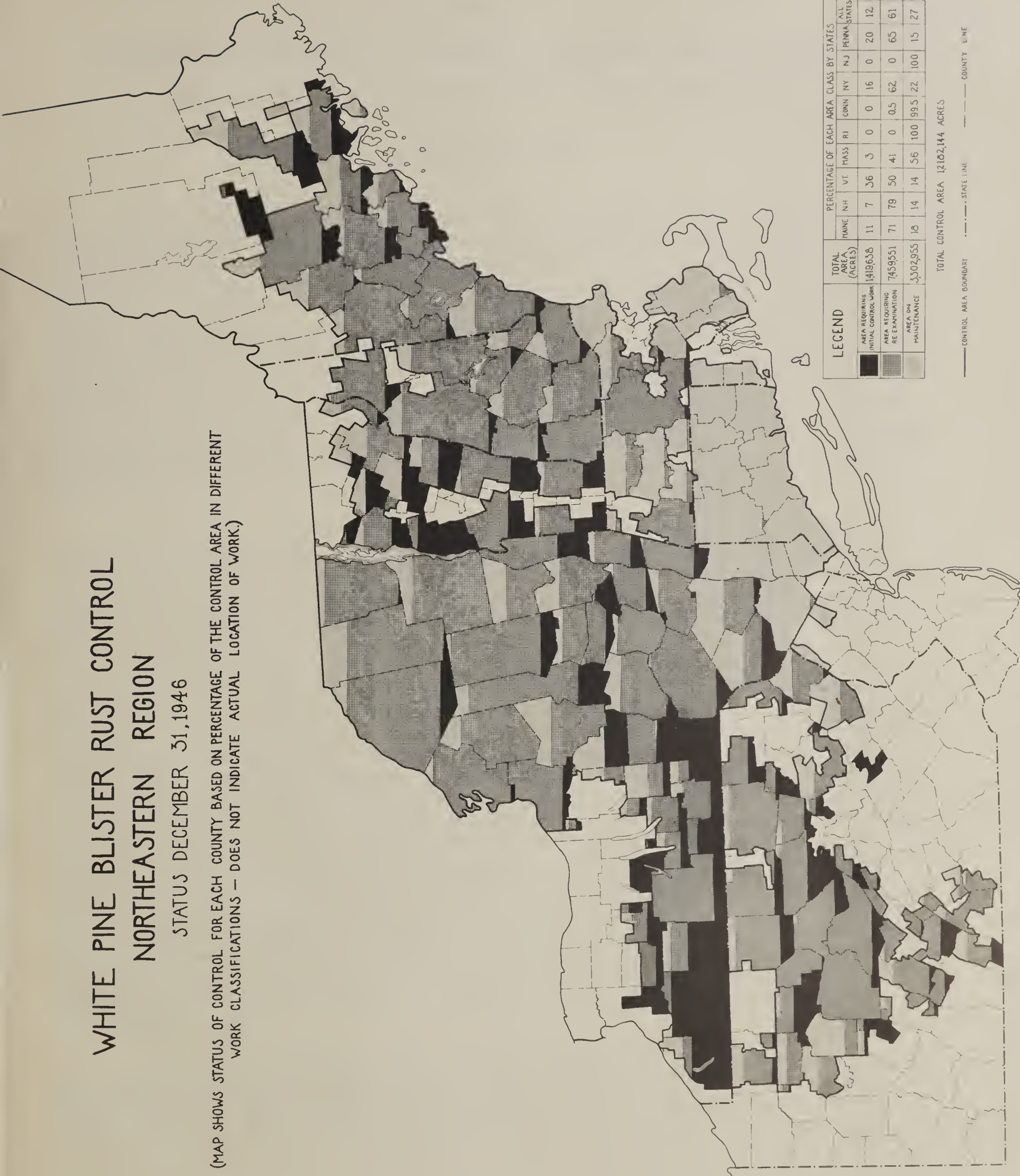
The following chart shows the status of control for each county based on the percentage of the control area in the following work classifications: initial work to be done, examination required to determine need for rework, and on maintenance.



# WHITE PINE BLISTER RUST CONTROL NORTHEASTERN REGION

STATUS DECEMBER 31, 1946

(MAP SHOWS STATUS OF CONTROL FOR EACH COUNTY BASED ON PERCENTAGE OF THE CONTROL AREA IN DIFFERENT  
WORK CLASSIFICATIONS — DOES NOT INDICATE ACTUAL LOCATION OF WORK.)



LEGEND	TOTAL AREA (ACRES)	PERCENTAGE OF EACH AREA CLASS BY STATES										ALL PENNA. STATES	
		MAINE	N.H.	V.T.	MASS.	R.I.	CONN.	N.Y.	N.J.	PA.	DE.	MD.	VA.
AREA REQUIRING INITIAL CONTROL WORK	1,419,638	11	7	36	3	0	0	16	0	20	12		
AREA REQUIRING RE EXAMINATION	745,951	71	79	50	41	0	0.5	62	0	65	61		
AREA ON MAINTENANCE	3,302,955	18	14	14	56	100	99.5	22	100	15	27		

TOTAL CONTROL AREA 1,210,144 ACRES

—— CONTROL AREA BOUNDARY    - - - - STATE LINE    ——— COUNTY LINE





## PART II

### LEADERSHIP, COORDINATION AND TECHNICAL DIRECTION OF WHITE PINE BLISTER

#### RUST CONTROL IN NORTHEASTERN REGION - WORK PROJECT BLR-1-1

##### GENERAL STATEMENT

Under Work Project BLR-1-1, the Bureau of Entomology and Plant Quarantine is responsible for the leadership, coordination, and technical direction of all blister rust control activities in the Northeastern Region comprising the six New England States, New York, New Jersey and Pennsylvania. Over 99.8% of the white pine in the control area in this region is on state and privately-owned lands, chiefly farm woodlots. Under the provisions of the Ion Act, federal funds have been allotted to the states since July 1, 1941 for control work on such lands in cooperation with states, counties, towns, associations and individual pine owners. The Bureau is also cooperating with the U. S. Forest Service and the National Park Service in protecting the white pines on federal lands which include three national forests and one national park in this region. Detailed information on the results of such control activities are given in Parts IV and V of this report.

Cooperative control work on state and privately-owned lands in each state is conducted under a memorandum of understanding between the Bureau of Entomology and Plant Quarantine and the authorized state regulatory agency - usually the state forestry department. No control work has been performed in New Jersey since 1937 as all of the important white pine areas in that state have been protected and are on a maintenance basis. Under the cooperative agreements in the other eight states, the Bureau furnishes the services of a state blister rust control leader and such district leaders as may be agreed upon from time to time in accordance with the needs of the work and availability of funds. These leaders give direct supervision to all control activities in their respective districts. The five district leaders in New Hampshire also act as district forest fire wardens and spend about one-fourth of their total time on such activities, the cost of which is paid from forest fire control funds. A similar arrangement also prevails in Vermont, where the three district leaders spend one-quarter of their total time on informational and service work in connection with fire protection and general forestry activities. The cooperating states furnish the services of a responsible state employee (usually state forester) who has nominal charge of the cooperative program and is responsible for all matters concerned with the enforcement of any state laws and policies with respect to blister rust control. The states also furnish necessary office space and other facilities for our leaders at the state headquarters and cooperate with counties, towns, associations and individuals in the local eradication of ribes.

The responsibilities of the Bureau of Entomology and Plant Quarantine in the cooperative blister rust control program in the Northeastern States are administered by the Cambridge, Mass. regional office of the Division of Plant Disease Control. This office provides the over-all planning and coordinates



all cooperative control activities into a uniform program; budgets federal funds for control work; inspects field activities to make sure effective results are accomplished; conducts special field surveys; furnishes the blister rust control leaders and cooperative employees with subject matter and technical information essential to the proper conduct of the work; summarizes and analyzes records of accomplishments; makes purchases of supplies, materials, and equipment; processes all payrolls and accounts paid from federal funds; and prepares special records, periodical and annual reports.

In addition to their supervisory duties, the Bureau technical employees assist the cooperating agencies by making preliminary examinations of areas to be worked; inspect field operations and completed work; place definite units of the control area on maintenance; inspect areas affected by the hurricane and/or logging operations to determine amount of existing or potential white pine, discontinuing from the control area portions containing inadequate pine stocking; analyze and interpret checking data; assist in maintaining standards of control; advise on special control problems; conduct informational and service work to keep cooperators and the public fully informed; and report on rust conditions and accomplishments.

### Personnel

There were only three changes in the permanent personnel of the Division of Plant Disease Control in this region during the calendar year 1946.

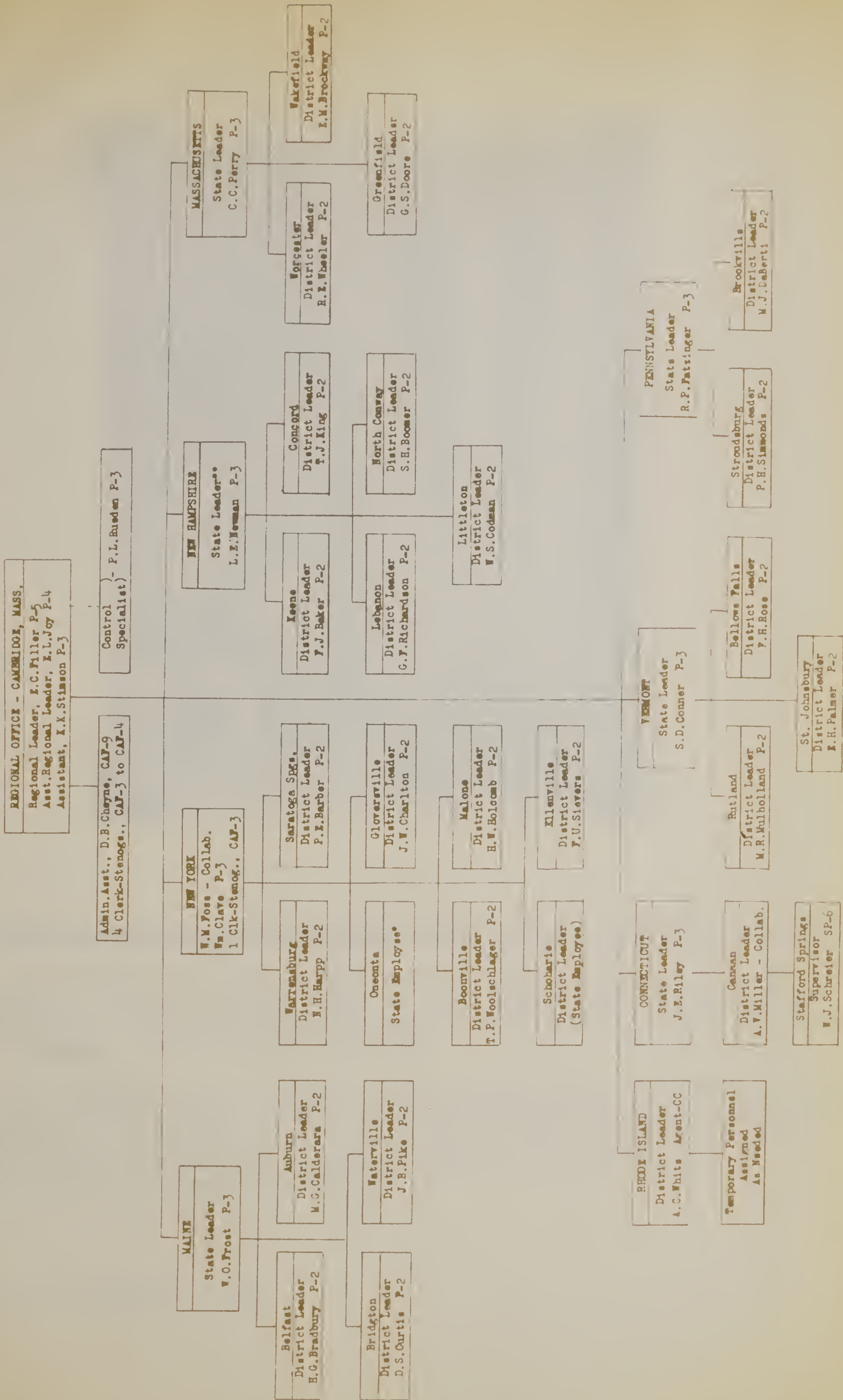
Mr. Edward L. Joy joined our staff as Assistant Regional Leader on March 6, 1946. Mr. J. B. Pike, Jr. was appointed on August 11, 1946 to fill the vacant district leader's position in Maine and has worked with Mr. Curtis in the Bridgton district since that time. He will take over that district when Mr. Curtis retires on April 30, 1947. District Leader Yops, of New York, accepted a position with the State Conservation Department on July 1, 1946. He was granted leave without pay during the period July 1 to October 31, 1946, but resigned on November 1, 1946. Mr. F. U. Sievers, an experienced blister rust control employee was placed in charge of the Elleville District for the balance of the 1946 season and was appointed district leader effective December 12, 1946.

At the end of 1946, the permanent personnel of the Division of Plant Disease Control in the Northeastern Region consisted of eight regional office employees, seven state leaders, and 24 district leaders including one SP-6 employee who directs control activities in the eastern Connecticut district. In addition, one full-time leader is employed in Rhode Island, the state and federal government paying his salary alternately for six-month periods. The State of Connecticut furnishes a full-time leader to supervise control activities in the Litchfield County district, while in New York a state district forester directs control operations in the Oneonta District and another employee of the State Conservation Department had charge of the work in the Schoharie District during 1946.

Dr. Rusden, who is in charge of all blister rust control investigational work in the three eastern regions, is also headquartered at the Cambridge, Mass. office of our Division.

The following organization chart gives detailed information on the permanent personnel employed on blister rust control activities in this region at the end of 1946.





\*State District Forester Hick gives general supervision to control activities in this district.  
 \*\*State Leader Newman of New Hampshire also supervises control activities in the Rockingham district.  
 District leaders in New Hampshire and Vermont spend one-quarter of their time on forest fire protection and other forestry activities.





OLDEST AND YOUNGEST DISTRICT BLISTER RUST CONTROL LEADERS IN NORTHEASTERN REGION

D. S. Curtis (on left) started work on blister rust control in Maine during the spring of 1919 and has been leader in the Bridgton, Maine, district since March 24, 1922. After serving over 25 years as a district leader, he will retire from the Federal service on April 30, 1947.

M. R. Mulholland was employed on ribes eradication work in New York State during the seasons of 1931 and 1932. From September 1933 to August 1935, he was employed on cooperative control work and as a C.C.C. technical foreman in Vermont. Since that time, he has been in charge of blister rust control activities in the Rutland, Vt., district.





### Informational and Service Activities of District Leaders

Effective informational and service work by the blister rust control leaders is essential to keep federal, state, county and local officials, and the public fully informed regarding the work, particularly as regards the necessity for reworkings and the need for maintaining control. Such activities are especially important in the States of Maine, New Hampshire, Vermont, Connecticut and New York where town and county appropriations constitute a relatively large proportion of the total cooperative funds provided for control work.

Informational work creates attention, interest and desire for blister rust control, but personal interviews with pine owners, local officials and other interested persons, as well as field demonstrations of the disease and control methods, are essential to obtain local cooperation. The principal methods of disseminating information are: news items in local papers; blister rust talks at meetings, which are usually supplemented with slides or blister rust and other forestry films; radio talks; roadside demonstrations and displays at fairs and post offices or in store windows; and distribution of illustrative material and publications.

Compared with the previous year, there was a general increase during 1946 in all phases of the district leaders' informational and service activities. The following tabulation gives a comparison of the two years' accomplishments:

	1945	1946	% Increase In 1946
Meetings addressed.....	254	270	6.3
Attendance at meetings.....	17,264	21,917	30.0
News items published.....	147	149	1.4
Demonstrations placed.....	84	96	14.3
Initial interviews.....	5,098	5,546	8.8
Follow-up calls.....	4,887	5,268	7.8
Persons instructed in field....	2,161	2,819	30.4

Many of the district leaders continued to make good use of the 16 mm. colored blister rust sound film, especially in public schools, and the 35 mm. black-and-white film was shown to advantage at several local theaters. For example, during the period March 11 to April 15, District Leader Doore, of Massachusetts, gave 49 showings of the 16 mm. film to a total of 6,061 high school pupils and adults. In February and March, District Leader Harpp gave talks and showed blister rust and other forestry films at 21 centralized schools in Warren and Essex Counties, New York. The total attendance at these meetings, including students and teachers, was approximately 7,000. Several of the leaders in this region collaborated in the preparation of the new series of blister rust films. State Leader Perry, of Massachusetts, devoted about eight weeks during August and September assisting the camera man from the Office of Motion Pictures in shooting the scenes for the new Northeastern Region film and those scenes in the general film scheduled for locations in this region. The script for the former film was completely rewritten in December on the basis of the scenes taken, and copies submitted to the state leaders in this region for their information and criticism.



A special blister rust exhibit was prepared under the direction of Dr. Rusden for the annual meeting of the American Association for the Advancement of Science which was held at Boston during the last week in December. The exhibit was built around an attractive 425-foot pastel mural on wallboard done by District Leader Miller, of Connecticut, depicting a typical New England scene of young pines and ribes plants that developed since the hurricane of 1938. The registered attendance at the meeting was over 3,000 and about 1,000 persons visited the blister rust exhibit.

Our Division cooperated with the Department's Agricultural Exhibits Service by furnishing the services of District Leader Richardson of New Hampshire, to assist Dr. Henderson in setting up and attending a large U.S.D.A. exhibit at the Rutland, Vt. fair during the week ending September 7. The exhibit was transferred to the State Fair at Plymouth, N.H. for the following week where Mr. Richardson did an excellent job of setting up and handling the exhibit which was approximately 125 feet long and weighed about five tons. Reports indicate that it was one of the most attractive exhibits at either fair.

Table 4 summarizes the 1946 informational and service activities by states. The volume of such work varied considerably in the different states and was somewhat greater in those where town and county cooperation was solicited. For example, nearly 88% of all the meetings addressed by the district leaders were in New Hampshire, Vermont, and New York. The district leaders in Maine addressed only six meetings during the year and published only five news items, but the volume of service work performed by the leaders in this state was considerably high than the averages for all states, and such service activities were apparently as effective in obtaining town cooperation as in New Hampshire and Vermont where greater emphasis was placed on informational work.



Table 4 - Summary of 1946 Informational and Service Activities of District  
Blister Rust Control Leaders in Northeastern Region

Informational Activities

State		Meetings Addressed		No. Items Published	No. Demonstrations Placed
		No.	Attendance		
Maine		6	253	5	14
N. H.		126	6,139	71	23
Vt.		34	1,644	17	31
Mass.		16	1,723	2	1
R. I.		4	380	-	-
Conn.		7	139	-	11
N. Y.		77	11,639	43	9
Penna.		-	-	6	7
All States		270	21,917	149	96
Average Per Leader	1946	9.6	783.7	5.3	3.4
	1945	10.2	690.6	6.9	3.4

Service Activities

State		No. Initial Interviews	No. Follow-up Calls	No. Individuals Instructed In Field
Maine		984	1,279	272
N. H.		1,087	1,627	689
Vt.		389	570	55
Mass.		483	97	54
R. I.		62	39	7
Conn.		259	110	46
N. Y.		2,098	1,543	1,245
Penna.		184	3	451
All States		5,546	5,268	2,819
Average Per Leader	1946	198.1	188.1	100.7
	1945	203.9	195.5	86.4



### Cooperation with Other Government Agencies

At the request of the U. S. Forest Service and the New York State Conservation Department, arrangements were again made to detail one of the New York district leaders to farm forestry work during the period December 1, 1945 to March 15, 1946 and for  $3\frac{1}{2}$  months starting December 1, 1946.

Excellent cooperation was received from the Division of Gypsy and Brown-Tail Moths Control. This Division furnished office and garage space for one of our district leaders at Greenfield, Massachusetts; provided winter storage for several of our trucks and made repairs to some of these cars at their Greenfield and Wilkes-Barre garages; and made additional multilith copies of our latest blister rust control field manual during the spring of 1946.

Arrangements were made with the U. S. Forest Service to have several of our cars repaired at their garage in Bartlett, N.H. This agency also furnished dead storage for a few of our trucks at Marienville, Penna.

In accordance with an informal understanding with the Waltham, Mass. office of the Division of Japanese Beetle, Gypsy and Brown-Tail Moths Inspection and Certification, most of the blister rust control leaders in the region have been authorized to make inspections of small non-commercial shipments of nursery stock which are brought to their offices. Our leaders were furnished with necessary instructions and forms and reported many inspections of small shipments especially during the Christmas tree shipping season.

The East Orange, N.J. office of our Bureau also assisted our Division by making several hundred multigraph copies of the new Safety and Health Manual, which were distributed to all regional offices of our Division.

### Bond Purchases by Permanent Personnel

Total purchases of savings bonds by permanent employees under the payroll deduction plan during the calendar year 1946 amounted to \$11,832.51 which represented 8.1% of the gross payroll. Currently, thirty-two of the 42 permanent employees in this region are still participating in the payroll deduction plan and allotting 7.52% of their gross salaries for bond purchases.



Table 5 - Total Expenditures and Contributed Services for Work Project BLR-1-1  
During Calendar Year 1946

State	Value of Contributed Services by States*	B.E. & P.Q. Expenditures (3101.14)	Total
Maine	\$ 300.00	\$ 18,818.18	\$ 19,118.18
N. H.	300.00	24,495.76	24,795.76
Vt.	690.00	15,117.95	15,807.95
Mass.	94.16	16,827.55	16,921.71
R. I.	500.16	1,501.38	2,001.54
Conn.	1,000.00**	5,176.22	6,176.22
N. Y.	4,504.02	29,384.77	33,888.79
Penna.	74.00	13,688.37	13,762.37
All States	\$7,462.34	\$125,010.18	\$132,472.52

\*Technical services of state employees.

\*\*Includes \$200.00 chargeable to Project BLR-2.

Table 6 - Federal 3101.14 Expenditures for Work Project BLR-1-1  
During Calendar Year 1946

State	Salaries of Appointees	L/A Expenditures	Leases	Total
Maine	\$ 16,702.16	\$ 1,842.02	\$ 274.00	\$ 18,818.18
N. H.	21,778.71	2,207.05	510.00	24,495.76
Vt.	13,292.23	1,825.72	-	15,117.95
Mass.	15,566.94	1,260.61	-	16,827.55
R. I.	1,501.38	-	-	1,501.38
Conn.	4,423.37	752.85	-	5,176.22
N. Y.	26,162.36	2,509.41	713.00	29,384.77
Penna.	11,756.31	1,788.06	144.00	13,688.37
All States	\$111,183.46	\$12,185.72	\$1,641.00	\$125,010.18

Tables 5 and 6 do not include Federal 3101 expenditures for the Cambridge regional office totalling \$41,063.75 which consisted of \$32,703.37 for the salaries of appointees, \$8,010.38 L/A expenditures, and \$350.00 for leases. Dr. Rusden's salary and expenses for the entire year are included in the Cambridge Office expenditures.



PART IIICOOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED LANDS  
IN NORTHEASTERN REGION - WORK PROJECT BLR-3-1GENERAL STATEMENT

The present control area on state and privately-owned lands in this region comprises 12,157,957 acres, of which 4,182,403 acres is in white pine growth meeting stocking requirements. At the end of 1946, initial eradication had been performed on 10,738,925 acres or 88.3% of the present control area, 41% had been worked twice, and 6.6% three times. As a result of this work, 3,283,570 acres, or 27% of the area, has been put on maintenance. The control problem in this region has been greatly increased as a result of the 1938 hurricane damage in New England and the accelerated cutting of white pine in all states since that time. Over a million acres of white pine has been cut in the Northeastern States since 1938 with a high percentage of the disturbed areas restocking adequately to white pine. Timely action must be taken to eliminate any ribs in these cut-over areas and save the young pine growth from destruction by the rust. Initial work is still needed on 1,419,032 acres and nearly 7½ million acres require examination to determine the amount of rework necessary before the areas can be placed on maintenance.

State and Local Cooperation on Project BLR-3-1

Under the provisions of the Lea Act, federal funds are allotted for blister rust control work on state and private lands. The states and local cooperators continued active support of the program during the war period and increased their expenditures during 1946, especially in New York where the state appropriation was raised from \$25,000. to \$100,000.

In Maine, New Hampshire, Massachusetts, Connecticut and New York, state funds are appropriated specifically for blister rust control while in Vermont, Rhode Island and Pennsylvania, allotments for this purpose are obtained from other appropriations usually for general forestry or pest control work. Additional funds were also allotted from other state appropriations during the current year in Massachusetts and New York. Total state expenditures and contributed services for Project BLR-3-1 during 1946 amounted to \$137,858.85 which was an increase of 117% over 1945. The increase in New York alone was 233%.

Twelve counties in New York appropriated \$14,518.00 for control work in 1946, of which \$14,166.66 was expended. One county also contributed services valued at \$1200, making a total of \$15,366.66 county cooperation as compared with \$12,162.14 in 1946.

A total of 181 towns in Maine, New Hampshire, Vermont and Connecticut appropriated \$42,655.00 for cooperative ribs eradication work during 1946 compared with 152 towns providing \$34,951. in 1945. The 1946 town money included \$5,611.00 carried over from 1945 as unexpended appropriations in 25 towns, and \$3,116.00 in compulsory appropriations under the state law in New Hampshire. In addition, two cities in Massachusetts contributed \$41.00 for control work on their watershed properties. Due to labor shortages in some localities, especially



in New Hampshire, it was not possible to spend all of the 1946 town money appropriated. Total expenditures amounting to \$31,414.71 represent 73.6% of the amount available. In most cases, the unexpended balances will be available for work during 1947. The following table gives a summary of all town appropriations in the three northern New England States during 1946.

Table 7 - Town Appropriations in Maine, New Hampshire and Vermont During 1946

State	New Appropriations		Appropriations Carried Over From 1945		Compulsory Appropriations		Total Appropriations	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Maine	42	7,550.	9	1,400.	-	-	51	8,950.
N. H.	60	17,600.	16	4,211.	8	3,116.	84	24,921.
Vt.	30	6,500.	-	-	-	-	30	6,500.
Totals	132	31,650.	25	5,611.	8	3,116.	165	40,377.

In Connecticut, 16 towns added \$2,275.00 to their sinking funds in 1946 for control work as needed in the future. During the period 1941-1946, inclusive, 22 towns in this state have raised \$16,483.30 under this plan or by special appropriations. Of this total, only \$2,631.20 has been expended and \$3,702.30 reverted to the town treasuries, leaving a balance of \$10,099.80 for future control work. No town cooperation was solicited in New York during 1946.

Very little individual cooperation has been solicited during recent years, but in 1946, a total of \$4,614.71 was expended by 20 cooperators on ribes eradication work as compared with only \$360.85 spent by 22 cooperators in 1945.

As indicated in the following table state and local cooperative expenditures and contributed services for Project BLR-3-1 have increased in this region each year since 1941 to a peak total of \$189,254.93 for 1946. Table 53 in the Appendix lists detailed information on such expenditures and contributed services by states.

Table 8 - State and Local Cooperative Expenditures and Contributed Services For Project BLR-3-1 During Period 1942-1946, Inclusive

Calendar Year	States	Counties	Towns	Individuals	Total
1942	47,628.17	9,534.75	15,601.04	2,193.91	74,957.87
1943	50,315.35	7,552.88	17,400.82	906.56	76,175.61
1944	56,307.48	11,536.91	17,686.72	833.98	86,365.09
1945	63,509.81	12,162.14	25,039.62	360.85	101,072.42
1946	137,858.85	15,366.66	31,414.71	4,614.71	189,254.93
Total	355,619.66	56,153.34	107,142.91	8,910.01	527,825.92



### Control Area Examination and Mapping Work

Approximately two-thirds of the total control area on state and privately-owned lands in the region was detail mapped prior to 1946. However, most of the maps were made during the Emergency Programs, so many now need revision due to innumerable changes in the white pine areas resulting from the 1938 hurricane and the accelerated cutting since that year. Results of this re-mapping work indicate that in spite of the tremendous reduction in merchantable timber there is very little change in the total white pine acreage for most of the cut-over areas and abandoned farm lands are restocking to white pine, many previously understocked areas are now fully stocked and thousands of acres are being planted to this species each year. For example, re-mapping work during 1946 in four Connecticut towns within the area affected by the 1938 hurricane show a net gain of 5,345 acres of white pine. In the Adirondack region which produces more than half of the white pine timber in New York State, it is estimated that 50 percent of the areas logged from 1939 to 1942 are now satisfactorily stocked with white pine reproduction. The 1946 control area examination and mapping work resulted in a net reduction of 167,302 acres in the total control area on state and privately-owned lands in the region, but the total white pine acreage was reduced by only 1,905 acres. The decrease in the total acreage was disproportionately high because in many instances the width of the original protection zones was reduced. The balance of the reductions made in 1946 consisted chiefly of understocked pine areas or small scattered stands of white pine requiring relatively large protection zones.

A total of 390,337 acres were mapped in detail during 1946 and an additional 1,137,303 acres examined to determine the present pine stocking and/or control requirements. Compared with 1945 these represent increases of 117% in acreage mapped and 91% in other acreage examined. Table 9 summarizes the results of the 1946 control area examination and mapping work by states.

Table 9 - Results of Control Area Examination and Mapping Work - 1946

State	Acreage Detail Mapped			Additional Acreage Examined But Not Mapped			Total Man Days
	Initial Mapping	Re- Mapping	Total	Inside Control Area	Outside Control Area	Total	
Maine	33,455	11,951	45,406	39,721	59	39,780	416
N. H.	47,140	13,043	60,183	160,007	7,756	167,762	1,646
Vt.	3,745	7,039	10,784	138,190	20,919	159,109	513
Mass.	48,349	29,346	77,695	98,976	-	98,976	393
R. I.	7,732	8,541	16,273	50,573	-	50,573	186
Conn.	-	51,037	51,037	45,222	-	45,222	563
N. Y.	62,645	25,903	88,548	292,321	203,777	496,098	2,955
Penna.	4,375	36,036	40,411	29,718	50,065	79,783	152
All States	207,441	182,896	390,337	854,728	282,575	1,137,303	6,824



## Use of Aerial Photographs on Mapping Work

Preparation of maps showing all necessary detail for the entire control area of over 12 million acres in the Northeastern Region is a tremendous task. In the past, the general procedure involved the use of U.S.G.S. maps from which road blocks were enlarged to desired scale. Details were then located in the field by compass and pacing, and plotted on the enlargements. This method produces good maps but is slow and costly. In an effort to speed up the mapping work, the possibility of using aerial photographs was thoroughly investigated and tested for two years. Through this work it was found that a photograph is not only an aid in our mapping work, but that it can be transformed directly into the desired map. It was also found that through elimination of most of the compass and pacing work as well as the time consumed in making enlargements, a more accurate map can be produced on an aerial photograph with greater speed and at far less cost.

In order to bring all of the experimental results together for study and test toward development of a regional mapping procedure using aerial photographs, a conference of eleven leaders who had worked on the problem was held at Bridgton, Maine, in October. The result was the development of a standardized regional procedure for mapping on aerial photographs including a simplified set of mapping symbols. A mapping manual covering all phases of the procedure was prepared and distributed in November for immediate use.

The use of aerial photographs for the type mapping of forest areas was first attempted in Canada about 25 years ago. Since that time there has been continued progress in this field with developments in recent years pointed particularly toward stereoscopic devices for direct timber type determination from study and interpretation of the photographs. One such device, the multiscope, will be tested to determine the possibilities of its use in segregating and mapping the white pine areas. If found to be practicable, a mapping production rate of several thousand acres per man day is considered possible. Another field of study in connection with the new mapping technique is a method of reproducing the aerial photograph type map to provide copies for field use. Reproduction by photography, direct printing by the reflex copy method, and photostatic reproduction appear to be the main possibilities.

Since July, 1944 approximately 2,850 aerial photographs have been purchased or are on order from various Government agencies for use on the mapping work in this region. Usually two prints of each photograph are obtained. Some photographic material has been purchased for all but three of the 28 districts in the region with a relatively large coverage in four districts. There has been considerable variation in the quality of the prints, but a high percentage are satisfactory. All orders are for prints on the scale of four inches to the mile on single weight, semi-matte paper. Reports indicate that the aerial photographs are a great aid in increasing production in the mapping. One district leader recently advised that this work in his district is progressing about three times as fast as it did under the old method. A mapper in New Hampshire averaged 387 acres per day based on total time in the field and office to produce a finished map of one township. This rate is at least five times the average production under the old detail mapping system in that state. Similar reports have been received from several of the other districts.



RIBES ERADICATION WORK ON STATE AND PRIVATE LANDS DURING 1946

Favorable field conditions made it possible to start ribes eradication early in May in most districts, but numerous rainy days during May and the first half of June handicapped field activities and resulted in considerable turn-over in labor. In Boston, there were only three clear days during the month of May and precipitation totalled 4.91 inches compared with a normal of 3.91 inches. Excessively hot, dry weather prevailed during the latter part of June and most of July. During the first 13 days in August, heavy rains occurred throughout the region. The total for Boston was over 5½ inches which exceeded the total for any August during the past ten years.

As an aid in recruiting labor, many of the district leaders used job prospectus leaflets which were left for distribution at employment offices, veterans' facilities, high schools, etc. Copies were also posted in post offices and other public places. A special effort was made to obtain the services of veterans and in some districts they comprised a large proportion of the personnel. On the whole, their services were much more satisfactory than those employed in 1945. A large number of high school boys were also employed this year but they constituted a smaller proportion of the total force than during the war years.

In spite of the wage increases, considerable difficulty was experienced in obtaining the desired number of laborers for control projects in some sections of the region, especially in parts of Massachusetts and in two New Hampshire districts. An investigation of the labor situation in these two districts revealed that the shortage was at least as bad as during the war years and was due chiefly to a speed-up in all phases of production to meet market demands as well as a grand scale reopening of tourist and hotel accommodations. The Massachusetts State Leader reported that the labor situation was even more difficult than in 1945. At no time during the field season was it possible to fill their quotas for which funds were available. Resort was made to the use of high school labor in one district, but with very unsatisfactory results. Veterans were also recruited but results were equally disappointing. In many instances throughout the region, men signed up for work, but failed to report. It was also a common experience to have men report and quit after one or two days. The relatively high labor turn-over made it necessary for many of the district leaders to devote a large proportion of their time to the procurement and training of personnel. It was only through their continued efforts along these lines that the many obstacles were overcome and commendable results were accomplished during 1946.

Wage Rates for Temporary Federal Personnel

The following hourly wage rates were approved at the beginning of the season for all laborers paid from Federal funds:

Crew men.....	70¢
Crew leaders.....	81¢
Scouts and Foremen.....	90¢



Effective July 1, 1946, these rates for federal laborers in New York State were increased to 80¢ per hour for crew men, 90¢ for crew leaders, and \$1.00 per hour for foremen and scouts. These new rates corresponded with increased rates paid to blister rust control workers by the State Conservation Department and were in line with prevailing local wages on work of a similar nature. Federal workers were not paid for lost time due to inclement weather which was one of the chief reasons for the high labor turn-over. Even on the basis of full-time employment, the average "take-home" pay for crew workers was less than \$30 per week. Employees who were working away from home had extremely small net earnings after paying for board and room at the increased rates that prevailed. These rates have "skyrocketed" in this region during recent years due to increased tourist and worker demands which has also made it extremely difficult to find accommodations for transient crews.

#### Temporary Personnel Employed on Ribes Eradication Work During 1946

A maximum of 983 laborers (crew men, crew leaders, scouts and foremen) were employed by all agencies on ribes eradication work on state and private lands during 1946. This number represents the peak employment during a single biweekly payroll period which varied in each of the states.

As indicated in the following table, a maximum of 766 laborers were employed on federal 3103 funds during any single payroll period with the peak occurring at different intervals in the various states. The total number of temporary workers employed (regardless of length of service) on these funds during 1946 was 1260 as compared with 622 the previous year and 546 in 1944. The difference between the total number of 3103 employees (1260) and the peak number employed during a single payroll period (766) does not represent the actual turn-over of such employees. Many of the temporary workers were on federal payrolls for varying periods and then paid from state or local cooperative funds, or vice versa. Of the total number of such federal employees, 39 percent were teen-aged boys and 38 percent veterans. Also, 34 percent of the total federal force was used in New York State.

Table 10 - Temporary Personnel Employed on Ribes Eradication Work in 1946

(Work on State and Private Lands Only)

State	Maximum Number of Crew Men, Crew Leaders, Scouts and Foremen Employed by All Cooperating Agencies	Employees Paid from Federal 3103 L/A Funds		
		Maximum Number*	Total Number**	Period of Peak Employment
Maine	155	134	261	June 16-29
N. H.	215	161	248	July 14-27
Vt.	72	72	128	June 16-29
Mass.	52	35	54	Aug. 25-Sept. 7
R. I.	4	2	2	May 8-Oct. 5
Conn.	22	18	24	July 14-Aug. 24
N. Y.	394	275	427	June 16-29
Penna.	69	69	116	June 2-15
All States	983	766	1,260	-

\*Peak employment during a single biweekly period.

\*\*Regardless of length of time employed.

Results of 1946 Ribes Eradication Work on State and Private Lands

A total of 856,848 acres of state and privately-owned lands were cleared of 4,968,700 wild and cultivated ribes during 1946 as a result of 64,505 man days of labor. Compared with the previous year, there were increases of 74% in acreage worked, 133% in ribes destroyed and 107% in man days employment.

Table 11 summarizes the results of the 1946 eradication work on state and privately-owned lands in each state by types of work.



Table 11 - Ribes Eradication Work on State and Private Lands During 1945First Work

State	Total Acreage Worked	% Total for Each State	Average Acreage Worked Per District in Each State	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	47,269	21.4	15,756	392,051	401	3,019	8.3	.06	15.7
N. H.	23,551	10.6	3,925	352,308	187	3,167	15.0	.13	7.4
Vt.	18,620	8.4	6,207	221,235	34	2,205	11.9	.12	8.4
Mass.	17,797	8.0	5,932	25,127	1,204	652	1.4	.04	27.3
N. Y.	74,650	33.7	9,331	1,083,884	2,190	8,303	14.5	.11	9.0
Penna.	39,514	17.9	13,171	386,384	312	5,269	9.8	.13	7.5
All States	221,401	100.0	8,615	2,460,989	4,323	22,605	11.1	.10	9.8

Second Work

Maine	110,861	26.8	36,954	563,246	53	5,386	5.1	.05	13.5
N. H.	43,596	10.6	7,266	299,211	305	5,575	6.9	.13	7.8
Vt.	14,910	3.6	4,970	99,869	34	1,332	6.7	.13	7.7
Mass.	42,023	10.2	14,008	86,686	405	2,434	2.1	.06	17.3
R. I.	7,486	1.8	7,486	1,905	-	251	0.3	.03	23.3
N. Y.	187,078	45.3	23,385	680,017	1,107	13,121	4.7	.07	14.3
Penna.	7,275	1.7	2,425	42,146	2	807	5.8	.11	9.0
All States	413,229	100.0	15,305	1,973,080	1,906	29,306	4.8	.07	13.9

Other Workings

Maine	3,859	1.7	1,286	1,440	-	64	0.4	.02	60.3
N. H.	14,189	6.4	2,365	53,996	67	1,334	3.8	.09	10.6
Vt.	2,923	1.3	974	20,664	-	480	7.1	.16	6.1
Mass.	15,541	7.0	5,180	14,534	67	557	0.9	.04	23.7
R. I.	5,069	2.3	5,069	1,663	-	179	0.3	.04	28.3
Conn.	45,643	20.5	22,821	39,893	-	1,203	0.9	.03	37.8
N. Y.	134,820	60.7	16,852	401,420	332	8,141	3.0	.06	16.6
Penna.	174	0.1	58	2,021	-	30	11.6	.17	5.8
All States	222,218	100.0	7,653	534,631	466	12,094	2.4	.05	19.4



Table 11 (Continued) - Ribes Eradication Work on State and Private Lands During 1946All Work

State	Total Acreage Worked	% Total for Each State	Average Acreage Worked Per District in Each State	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	161,989	18.9	53,996	956,737	454	8,769	5.9	.05	18.5
N. H.	81,336	9.5	13,556	705,515	559	10,076	8.7	.12	8.1
Vt.	36,453	4.2	12,151	341,768	68	4,617	9.4	.13	7.9
Mass.	75,361	8.8	25,120	126,347	1,676	3,743	1.7	.05	20.1
R. I.	12,555	1.5	12,155	3,568	-	430	0.3	.03	29.2
Conn.	45,643	5.3	22,821	38,893	-	1,209	0.9	.03	37.8
N. Y.	396,548	46.3	49,568	2,365,321	3,629	29,563	6.0	.07	13.4
Penna.	46,963	5.5	15,654	430,551	314	6,096	9.2	.13	7.7
All States	856,848	100.0	29,546	4,968,700	6,700	64,505	5.8	.075	13.3

The total acreage cleared of ribes on state and private lands in the Northeastern Region during 1946 consisted of 221,401 acres of initial work, 413,229 acres of second work, and 222,218 acres of other workings. Of the total acreage examined, 74% was rework as compared with 83% in 1945 and 76% in 1944. A special effort was made to clean up areas urgently in need of initial work during 1946, especially in Vermont and Pennsylvania where 36% and 20%, respectively, of the control area is still unworked. The amount of initial work in these two states during 1946 exceeded the rework, but in the other states, where most of the initial work has been completed, more emphasis was given to rework, especially on reproduction areas in order to maintain control on as many of the worked areas as possible.

Over 46% of all the 1946 eradication work was in New York State, where excellent progress was made during the year in all phases of the control program. Over one fourth of the total acreage worked in the region this year was in two New York districts. Prospects are that adequate funds will be made available in this state to carry out the objectives of the five-year program on schedule. Excellent progress was also made in Maine during 1946 when an average of 53,996 acres per district were cleared of ribes.

For the first time in several years, there was an increase in the number of ribes destroyed per acre, the average for all of the 1946 work being 5.8 bushes as compared with 4.3 for 1945, or an increase of 39.5%. The 1946 averages for all work ranged from 0.3 bushes per acre in Rhode Island to 9.4 per acre in Vermont. As indicated in Table 11, an average of 11.1 bushes per acre were destroyed on all initially worked areas, 4.8 bushes per acre on the second workings, and 2.4 on other workings. With a few exceptions, approximately the same per acre relations prevailed in the individual states. In Vermont and Pennsylvania, the averages were slightly higher for other workings than for



second workings. The low average values for all rework are misleading since portions of the areas contain a considerable number of bushes. Each area is examined in its entirety to locate and destroy these concentrations and thereby give adequate protection to the pine. The portions with low ribes populations are covered by the scouting method.

Compared with the previous year, decreases in acres worked per man day occurred only in the States of New York, Pennsylvania and Massachusetts. In the first two states, these were due to the substantial increases in the amount of initial work and number of ribes pulled during 1946. In Massachusetts, a considerable portion of the labor was of poor quality. More difficult working conditions were encountered on many areas due to debris from the hurricane and logging operations. The amount of annual leave accumulated and used by the temporary workers in 1946 was 12.8 times greater than during 1945. Such leave in 1946 totalled 18,500 man hours and represented 5.3% of the total federal hours charged to ribes eradication. At an average of 80 cents per hour, this leave entails a cost of \$14,800. The more scattered distribution of pine areas also caused more time to be spent in travel between jobs.

Provision was made during 1946 to obtain separate data for work on areas which had been previously placed on maintenance. The results of such maintenance work are summarized in the following table.

Table 12 - Ribes Eradication Work on Maintenance Areas During 1946

State	Type of Work	Acreage Worked	No. Ribes Destroyed	Total Man Days	Per Acre		Acres Per Man Day
					Ribes	Man Days	
R.I.	Second	7,436	1,905	251	0.3	.03	29.6
	Other	5,069	1,663	179	0.3	.04	28.3
	Total	12,555	3,568	430	0.3	.03	29.2
Conn.	All						
	Other	45,643	38,893	1,209	0.9	.03	37.8
N.Y.	Second	1,805	2,781	134	1.5	.07	13.5
	Other	15,940	27,728	746	1.7	.05	21.4
	Total	17,745	30,509	880	1.7	.05	20.2
Penna.	All						
	Second	1,639	729	144	0.4	.09	11.4
All States	Second	10,930	5,415	529	0.5	.05	20.7
	Other	66,652	68,284	2,134	1.0	.03	31.2
	Total	77,582	73,699	2,663	0.9	.03	29.1

All of the 1946 work in Rhode Island and Connecticut was on maintenance areas. The total of 77,582 acres represents 9.1% of all work performed on state and private lands in the region this year. An average of approximately one bush per acre was found, and the average production rate was 29.1 acres per man day. This high rate was due to the fact that most of the acreage was covered by scouts.



Table 13 - Comparison of Results of 1945 and 1946 Ribes Eradication Work  
On State and Private Lands

State	Total Acreage Worked			No. Ribes Destroyed			Man Days Employment		
	1945	1946	% Increase in 1946	1945	1946	% Increase in 1946	1945	1946	% Increase in 1946
Maine	95,251	161,989	70.1	562,790	956,737	70.0	5,040	8,769	74.0
N.H.	38,412	81,336	111.7	325,684	705,515	116.6	5,040	10,076	99.9
Vt.	23,067	36,453	58.0	188,709	341,768	81.1	3,121	4,617	47.9
Mass.	63,376	75,361	18.9	83,321	126,347	51.6	2,303	3,743	62.5
R.I.	7,561	12,555	66.0	2,944	3,568	21.2	454	430	5.3*
Conn.	21,947	45,643	108.0	44,230	38,893	12.1*	1,136	1,209	6.4
N.Y.	227,371	396,548	74.4	794,112	2,365,321	197.9	12,459	29,565	137.3
Penna.	16,620	46,963	182.6	131,814	430,551	226.6	1,657	6,096	267.9
All States	493,605	856,848	73.6	2,133,604	4,968,700	132.9	31,210	64,505	106.7

\*Decreases

Compared with 1945, there were increases in acreage, ribes and man days totals in 1946 except for the ribes destroyed in Connecticut and man days of employment in Rhode Island where there were decreases of 12.1% and 5.3% respectively. In Maine and New Hampshire, the increases were nearly in direct proportion. In spite of the decrease of 5.3% in man days in Rhode Island, there was an increase of 66% in acreage worked. Connecticut had an increase of 108% in acreage with only a 6.4% increase in man days.

On a percentage basis, the largest increases in acreage worked occurred in Pennsylvania, New Hampshire and Connecticut. However, the increase of 74.4% in New York represented 169,177 acres which was 46.6% of the total increase in the region.

#### Checking of 1946 Ribes Eradication Work

The standard designated procedure for checking the efficiency of ribes eradication was continued in 1946. This includes supervisory checking by foremen working behind crews, supplemented by the inspection checks of crew work by supervisors and leaders, and the measured general checks of completed areas. Several experienced supervisory foremen assisted the district leaders on the measured general checking work this year, as the leaders had to spend considerable time securing labor, training new personnel, and directing the field activities. Supervisory inspections of the crews at work are especially important because they keep the leaders in close touch with special problems that arise and enable them to take immediate action to correct faulty procedures.

In checking the efficiency of completed work, half red or red-wide strips are run through the most likely ribes sites, and a record kept of the acreage checked, and the number and live stem footage of ribes found. A maximum of 20 feet of live stem per acre has been established for approved work. All areas that show more than this amount are disapproved and action taken to have the area or portions thereof reworked to bring the entire job up to standard. A special form has been provided for recording the results of each check and these are forwarded to the regional office weekly, where they are summarized. The state and district leaders concerned are provided with semi-monthly or monthly summaries of these data.



Table 14 - Results of Measured General Checks of 1946 Ribes Eradication Work

State	Checks Made By	No. Checks	Hours Check- ing	Acres in Strip Checks	Ribes Found on Checks		Ribes Live Stem Found on Checks		Control Work	
					Total No.	Ave. Per Acre	Total FLS	FLS Per Acre	Approved	Dis- approved
Maine	District Leaders	30	42	56.1	235	4.2	761	13.6	21	9
	Erad. Assistants	60	96	68.4	445	6.5	581	8.5	57	3
	Total	90	138	124.5	680	5.5	1342	10.8	78	12
N.H.	District Leaders	224	349	179.6	811	4.5	1354	7.5	215	9
	Erad. Assistant	39	38	41.3	61	1.5	86	2.1	39	-
	Total	263	437	220.9	872	3.9	1440	6.5	254	9
Vt.	District Leaders	157	184	174.4	586	3.4	1522	8.7	155	2
Mass.	" "	189	270	260.5	696	2.7	1814	7.0	186	3
	Erad. Assistant	158	384	200.3	274	1.4	777	3.9	155	3
	Total	347	654	460.8	970	2.1	2591	5.6	341	6
R.I.	District Leader	37	96	27.5	78	2.8	274	8.5	32	5
Conn.	District Leaders	39	60	29.3	157	5.4	438	16.6	32	7
N.Y.	" "	162	184	180.2	421	2.3	1249	6.9	157	5
	Erad. Assistants	1477	3283	3118.6	6594	2.1	18075	5.8	1423	54
	Total	1639	3472	3298.8	7015	2.1	19324	5.9	1580	59
Penna.	District Leaders	131	132	115.5	747	6.5	1647	14.3	107	24
All States	" "	969	1317	1023.1	3731	3.6	9069	8.9	905	64
	Erad. Assistants	1734	3856	3428.6	7374	2.2	19519	5.7	1674	60
	Total	2703	5173	4451.7	11,105	2.5	28588	6.4	2579	124

## Analysis

State	No. Districts	Averages Per District				% Total Acreage Worked During 1946 Covered By Measured General Checks	% Worked Areas Checked Which Were Approved
		Acreage Cleared of Ribes	No. Measured General Checks	Hours on Measured General Checks	Acreage of Measured General Checks		
Maine	3	55.445	30.0	46.0	41.5	0.07	86.7
N.H.	5	15.424	52.6	87.4	44.2	0.29	96.6
Vt.	3	12.235	52.3	61.3	58.1	0.47	96.7
Mass.	3	25.120	115.7	218.0	153.6	0.61	98.3
R.I.	1	12.555	37.0	96.0	27.5	0.22	86.5
Conn.	2	22.821	19.5	30.0	14.7	0.06	82.7
N.Y.	8	49.568	204.9	434.0	412.3	0.83	95.4
Penna.	2	23.858	65.5	66.0	57.7	0.24	87.7
All States	27	31.777	100.1	191.6	164.9	0.52	95.4



Table 14 summarizes the results of the 1946 checking by states and gives an analysis of the data on the basis of averages per district. The district leaders and their assistants spent 5,173 hours making 2,703 checks in worked areas and found a total of 11,105 missed ribes with 28,588 feet of live stem on the 4,451.7 acres covered by the checks. The eradication assistants made 64% of the checks in 1946 as compared with 43% the previous year. In New York they made 90% of all checks in 1946. Based on regional totals, there was a substantial increase in the volume of checking in 1946 over the previous year, but all states except Massachusetts and New York were considerably below the arbitrary goal of 1.0% of the total acreage worked. In several of the states, especially Maine, more emphasis was placed on observations of the crews at work, supplemented by general checks behind the crews. In the districts where most of the control work was performed by scouting methods, few measured general checks are required due to the scarcity of ribes.

The live stem per acre found on all 1946 checks ranged from 5.6 feet in Massachusetts to 16.6 feet in Connecticut and averaged 6.4 feet for all states as compared with 7.7 feet in 1945. This decrease together with the fact that more ribes were destroyed per acre on the 1946 work indicate that higher efficiency was attained this year. Also, the work on 95.4% of all the areas checked this year was approved while in 1945, the total was 93.8%. An analysis of the ribes live stem data for all checks where the work was disapproved shows the following:

<u>State</u>	<u>No. Checks Where Work Disapproved</u>	<u>Average Live Stem Per Acre Found on Checks in Disapproved Areas</u>	<u>Maximum Live Stem Per Acre Found on Checks in Any Disapproved Area</u>
Maine	12	32.0	60.0
N.H.	9	31.6	72.0
Vt.	2	23.3	26.0
Mass.	6	34.9	57.0
R.I.	5	31.6	38.2
Conn.	7	42.6	190.9
N.Y.	59	27.2	125.0
Penna.	24	34.4	78.6
All States	124	29.9	190.9

The work on only 4.6% of all the areas checked this year was disapproved. Only 7 areas were disapproved in Connecticut, but they represent 17.9% of all the areas checked in that state. The disapproved areas in Connecticut were chiefly in blow-down areas where the work was extremely difficult. A similar situation prevailed in Pennsylvania where the 24 disapproved areas constituted 18.3% of all the areas checked. A large number of Ribes rotundifolium are encountered in many of the control areas in the Brookville district so exceptionally good work is necessary to reduce the live stem to the limit of 20 feet or less. Action was taken in all states to rework those portions of the control areas where the checks showed more than the allowable maximum of 20 feet of live stem per acre.



### Transportation of Workers

It was necessary to furnish transportation for most of the crews employed on ribes eradication work during 1946 as most of the employees who owned cars were reluctant to use them, even on a reimbursable basis, in getting to and from work, due to the poor condition of most of their machines. The Division furnished 44 trucks and a few passenger cars for crew transportation. Several state and county-owned trucks were also available to transport crews in New York. However, transportation difficulties were encountered in many districts and in some instances it was necessary to curtail the work due to lack of transportation. A special effort was made to obtain workers who were willing to use their personally-owned cars. A maximum of 29 temporary employees were authorized to use their cars on official work during the season.

The average age of the 45 government-owned trucks in this region is nearly 11 years. No trucks have been purchased since 1939 so three-fourths of them are now in poor condition, having traveled an average of over 70,000 miles over rough roads in rural sections. Several have been driven over 100,000 miles and maintenance costs on all are extremely high. It is becoming increasingly difficult to keep many of the units in a condition approaching a minimum of safety standards. All efforts to obtain surplus automotive equipment through the War Assets Corporation were unsuccessful. However, orders have been placed for 32 new trucks with prospects that they will be available for use during at least a portion of the 1947 season. All old trucks which will be serviceable during 1947 are being retained.

### Injuries to Temporary Federal Employees

Although a total of 1260 temporary workers were employed for 47,852 man days on Federal 3101 and 3103 funds in this region during the calendar year 1946, only 20 of these employees sustained traumatic injuries which were compensable under the provisions of the Federal Compensation Act of September 7, 1916. No injuries requiring medical attention were reported for such employees in Maine and Rhode Island, while Massachusetts and Connecticut each had one case. Temporary employment in all states during 1946 was 130.8% greater than the preceding year, but there was an increase of only 17.6% in the number of injuries. This indicates that the various memoranda regarding safety measures as well as the new Safety and Health Manual, which was issued to key employees this year, were instrumental in reducing injuries. The time lost by the 20 employees who were injured on the job during 1946 represents only 0.66% of the total man days employment for all temporary employees in the region. In 8 of the 20 cases, the employees did not stop work or were disabled for less than four days. The following tabulation lists the number and type of injuries by states:



State	Total No. Injuries	Type of Injury				
		Ivy or Oak Poisoning	Sprains & Bruises Falls	Other	Lacerations & Punctures	Misc.
N.H.	3	-	1	-	2	-
Vt.	5	1	1	1	1	1 (Heart attack)
Mass.	1	1	-	-	-	-
Conn.	1	-	1	-	-	-
N.Y.	8	2	1	1	3	1 (Fracture)
Penna.	2	-	1	-	1	-
Total	20	4	5	2	7	2

Two additional injuries were reported (one each in New York and Pennsylvania) but the Bureau of Employees' Compensation disallowed both cases. Only two of the 20 injuries during 1946 were serious. One employee in Pennsylvania sustained a fractured leg while moving a large stone in an effort to pull a ribes bush. This accident undoubtedly could have been avoided if the bush had been decapitated and chemicals applied to the crown. Another employee in Vermont suffered a heart attack while moving a large limb from a roadside where he planned to park a government car. Only four cases of ivy or oak poisoning were reported. This represents 20% of all injuries but it is the smallest number for any season during the past 15 years. Thirty-five percent of the 1946 injuries were lacerations or punctures, chiefly caused by thorns. Sprains and bruises, chiefly due to falls, also accounted for 35% of all injuries.

District Leader DeBerti, of Pennsylvania, sustained an injury while moving his Government car in a local garage, which resulted in the development of a left inguinal hernia. No other injuries were reported by the permanent personnel of the Division in this region during 1946.

#### State Compensation For Cultivated Ribes Destroyed During 1946

A total of 6700 cultivated ribes were destroyed on the control projects in 1946. It was not necessary for the states to pay any compensation for such bushes except in Pennsylvania where one owner was reimbursed \$0.50 for four ribes. Table 50 in the Appendix lists information on cultivated ribes compensation for all years.

#### Nursery Sanitation Work During 1946

Rework was performed this year in the environs of seven state and two privately-owned nurseries in four of the Northeastern States. A total of 1,312 wild ribes were removed from the 4,769 acres examined in the sanitation zones around these nurseries, which were growing 32,993,800 white pines for reforestation purposes. Only 115 bushes were found in the zones around six nurseries in Massachusetts, Connecticut and Pennsylvania.

Table 15 summarizes the results of the 1946 nursery sanitation work, while Tables 43 to 46 in the Appendix show the accomplishments on such activities during the period 1930-1946, inclusive, by states and programs, and the present status of the work.



Table 15 - Nursery Sanitation Work During 1946  
(All Rework)

State	No. Nurseries Worked		Est. Number White Pines in Nurseries Worked	Acreage Worked	No. Ribes Destroyed (all Wild)	Total Man Days	Ribes Per Acre	Acres Worked Per Man Day
	Private	State						
Mass.	1	-	3,100	60	91	9	1.5	6.7
Conn.	1	2	250,000	450	16	5	0.04	90.0
N.Y.	-	3	32,550,000	3,690	1,197	58	0.3	63.6
Penna.	-	2	190,700	569	8	2	0.01	284.5
All States	2	7	32,993,800	4,769	1,312	74	0.3	64.4

Blister Rust Canker Elimination Work

No blister rust canker elimination work was conducted on state and privately-owned lands in this region during 1946.

Tables 51 and 52 in the Appendix summarize the results of such activities since 1932 by states, programs, and land ownership classes.

Status of Control Work on State and Privately-Owned Lands

At the end of 1946, the total net control area on state and privately-owned lands in this region comprised 12,157,957 acres, which includes 4,182,403 acres of white pine growth meeting minimum stocking requirements. The total control area was reduced by 167,302 acres this year as a result of the elimination work performed by the district leaders and temporary employees assigned to such activities during the fall and winter months. Initial control work has been performed on 10,738,925 acres, or 88.3% of the present net control area. Approximately 41% of the control area has been worked twice, and 6.6% three times. Detail maps have been prepared for about 69% of the control area, but most of this work was performed during the Emergency Programs and many changes have occurred in the white pine types since that time. A special effort was made during 1946 to place as many areas as possible on maintenance and as a result the total acreage so classified was increased from 2,861,608 to 3,283,570 acres, which represents 27% of the total control area on state and private lands. All of the work in Rhode Island and New Jersey is on a maintenance basis, while 99.5% of the control area in Connecticut and 56.5% in Massachusetts are in this class. In the other states, the percentages range from 13.9% in Vermont to 21.6% in New York. The following table shows the status of the control in each of the Northeastern States.



Table 16 - Status of Blister Rust Control Work on State and Private Lands  
(December 31, 1946)

	Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked			Acreage on Main- tenance	Percentage of Net Control Area			
				Once	Twice	Three Times		Detail Mapped	Worked Once	Worked Twice	On Main- tenance
Ala.	2,456,578	954,840	2,088,668	2,183,532	1,011,519	44,382	426,393	85.0	88.9	41.2	17.4
Ariz.	3,024,535	1,342,583	1,400,352	2,806,944	903,637	60,700	428,480	46.3	92.8	29.9	14.2
Cal.	738,011	158,631	711,413	471,111	179,053	16,285	102,364	96.4	63.8	24.3	13.9
Conn.	1,662,073	598,955	951,656	1,617,011	994,548	121,002	938,725	57.3	97.3	59.8	56.5
Del.	162,407	71,256	131,113	162,407	150,903	34,068	162,407	80.7	100.0	92.9	100.0
Fla.	474,502	84,658	474,502	474,502	311,927	121,267	472,083	100.0	100.0	65.7	99.5
Idaho	2,873,341	828,893	1,945,761	2,404,864	1,278,920	35,647	621,651	67.7	83.7	44.5	21.6
Ill.	16,742	3,771	0	16,742	1,417	0	16,742	0	100.0	8.5	100.0
Ind.	749,768	138,816	668,946	601,812	141,628	30,525	114,725	89.2	80.3	18.9	15.3
Iowa	2,157,957	4,182,403	8,372,411	10,738,925	4,973,552	303,876	3,283,570	68.9	83.3	40.9	27.0

Future Control Work on State and Privately-Owned Lands

At the end of 1946, detail mapping was still needed on 3,785,546 acres, or 31.1% of the total control area on state and privately-owned lands. In addition many of the detail maps prepared several years ago will have to be checked in the field and any necessary corrections made due to the changes in the types resulting from logging, fire, hurricane damage, etc. The use of aerial photographs will greatly speed up future mapping work in this region.

Initial control work is still needed on 1,419,032 acres and all of the areas which have been initially worked but not placed on maintenance, comprising 7,455,355 acres, will have to be examined to determine the need for rework. Of this total, it is estimated that 5,605,385 acres were in need of such examination at the end of 1946.

The objective of the five year post-war program for blister rust control work in this region is to complete all initial control work and any rework necessary to place most of the control area on a maintenance basis. Present indications are that the period will have to be increased to eight or ten years in some of the states and the plan which was prepared in March, 1946 revised accordingly. All of the work in Rhode Island and New Jersey is already on a maintenance basis. Operations were suspended in the latter state after 1937, but some follow-up work will be necessary within the next few years. Plans have been made to examine the few thousand acres which are not on maintenance in Connecticut during 1947. Prospects are that adequate funds will be available to carry out the objectives of the five-year plan in New York where excellent results were accomplished during 1946. The control program is well advanced in Massachusetts and under normal conditions the objectives of the five year program might be accomplished with only a nominal increase in funds. Greatly accelerated programs will be required in the other states to accomplish the desired results.



Table 17 gives detailed information, by states, on the mapping and ribes eradication work needed on state and privately-owned lands at the end of 1946.

Table 17 - Control Work Needed on State and Privately-Owned Lands  
As of December 31, 1946

State	Total Acreage of Net Control Area	Acreage in Net Control Area in Need Of			Percentage of Net Control Area In Need Of		
		Initial Detail(1) Mapping	Initial Erad.	Examina- tion (2)	Initial Detail Mapping	Initial Erad.	Examina- tion
Maine	2,456,578	367,910	273,046	1,577,785	15.0	11.1	64.8
N.H.	3,024,535	1,624,183	217,591	2,023,642	53.7	7.2	66.9
Vt.	738,011	26,598	266,900	157,384	3.6	36.2	21.3
Mass.	1,662,073	710,417	45,062	435,429	42.7	2.7	26.8
R. I.	162,407	31,294	0	0	19.3	0	0
Conn.	474,502	0	0	2,419	0	0	0.5
N. Y.	2,873,341	927,580	468,477	978,429	32.3	16.3	34.1
N. J.	16,742	16,742	0	0	100.0	0	0
Penna.	749,768	80,822	147,956	430,296	10.8	19.7	57.4
All States	12,157,957	3,785,546	1,419,032	5,605,385	31.1	11.7	46.1

(1) In addition, many of the detail maps prepared several years ago will have to be checked in the field and any necessary corrections made due to changes in types.

(2) Based on estimates, submitted by district leaders, of total acreage which is currently in need of examination to determine portions requiring rework. There is a total of 7,455,355 acres in the region which has been initially worked but not placed on maintenance. This entire acreage will have to be examined and any necessary rework performed before being put in the maintenance class.

The acreage of initial control work still to be done in New York includes 229,059 acres in scattered woodlots and plantations in the western part of the state outside the present districts. Plans have been made to have the state district foresters supervise any necessary control work in this part of the state.

#### Expenditures For Project BLR-3-1

Federal 3103 expenditures for cooperative control work in eight of the Northeastern States during the calendar year 1946 totalled \$319,316.75, of which 94.4% was used for the wages of temporary personnel. Total 3103 expenditures amounted to \$325,243.58, which represents an increase of 183.7% over the preceding year.



State and local cooperative expenditures and contributed services for Project BLR-3-1 totalled \$189,254.93 which was an increase of 87.2% over the calendar year 1945. There were increases in such cooperative expenditures in all states, but the most noteworthy was in New York where it amounted to 222.2%. The state and local cooperative expenditures for Project BLR-3-1 in New York during the current calendar year comprised 56.7% of the total for the region.

Table 18 lists all expenditures and contributed services for Project BLR-3-1 during the calendar year 1946 by states.



Table 18 - Total Expenditures and Contributed Services For Work Project BLR-3-1 During Calendar Year 1946

State and Local Cooperative Expenditures and Contributed Services										
State	Cash Expenditures					Value of Contributed Services		Total	B. E. & P. Q. 3103.14	Grand Total
	State Funds	Towns	Counties	Indiv.	Sub-Total	State	Counties			
Maine	6,857.20	6,519.89	-	-	13,377.09	530.00	-	13,907.09	49,758.13	63,665.22
N. H.	5,295.10	18,154.13	-	-	23,449.23	1,944.49	-	25,393.72	53,928.54	79,322.26
Vt.	658.45	6,290.89	-	67.20	7,016.54	981.00	-	7,997.54	25,416.92	33,414.46
Mass.	5,226.77	41.00	-	3799.35	9,067.12	1,114.00	-	10,181.12	17,814.82	27,995.94
R. I.	3,319.82	-	-	-	3,319.82	1,155.96	-	4,475.78	2,859.73	7,335.51
Conn.	5,512.80	408.80	-	229.60	6,151.20	1,650.00	-	7,801.20	9,879.18	17,680.31
N. Y.	83,362.90	-	14,166.66	518.56	98,048.12	8,059.92	1200.00	107,308.04	133,206.25	240,514.29
Penna.	11,350.44	-	-	-	11,350.44	840.00	-	12,190.44	26,453.18	38,643.62
All States	121,583.48	31,414.71	14,166.66	4614.71	171,779.56	16,275.37	1200.00	189,254.93	319,316.75	508,571.68

Classification of B. E. and P. Q. Expenditures For Project BLR-3-1 During Calendar Year 1946

State	Salary of Appointee	Wages of Laborers, Scouts and Foremen	Non-Labor Expenses	Total
Maine	-	45,905.18	3,852.95	49,758.13
N. H.	-	50,026.64	3,901.90	53,928.54
Vt.	-	23,750.02	1,666.90	25,416.92
Mass.	-	16,777.32	1,037.50	17,814.82
R. I.	-	2,490.60	369.13	2,859.73
Conn.	2214.66	7,047.56	616.96	9,879.18
N. Y.	-	130,022.40	3,183.85	133,206.25
Penna.	-	25,508.29	944.59	26,453.18
All States	2214.66	301,528.01	15,574.08	319,316.75
% Total	0.7	94.4	4.9	100.0

In addition to the Federal 3103 expenditures listed in Table 18, a total of \$4999.04 was expended for special activities and \$927.79 for temporary clerks at regional office.



40

## PART IV

### BLISTER RUST CONTROL WORK ON NATIONAL FORESTS IN NORTHEASTERN REGION

#### FINANCIAL PROJECT BLR-4

Blister rust control work in cooperation with the U. S. Forest Service in this region involves projects on the White Mountain, Green Mountain, and Allegheny National Forests. At the end of 1946, the net control areas on these forests aggregated 7,315 acres of which 1,929 acres are in white pine. There are a number of additional tracts of white pine on the White Mountain and Allegheny National Forests which were discontinued from the control area as a result of surveys made in 1943 and 1945. Such action was approved by Forest Service officials and was in accordance with their management plans. The survey in 1945 also resulted in location of several small units of white pine on the Green Mountain National Forest and arrangements were made to conduct the necessary control work under Financial Project BLR-4. A small amount of ribes eradication work had been performed on this forest before the land was acquired by the Government.

#### Ribes Eradication Work During Calendar Year 1946

In accordance with our recommendations, the Forest Service allotted a total of \$3700. for ribes eradication work during the fiscal year 1947 on the three national forests listed. This amount was apportioned as follows: White Mountain - \$100., Green Mountain - \$600., and Allegheny - \$3000.

#### White Mountain National Forest

The \$100. allotment for this forest was for scouting work on two areas in Gilead and Stoneham, Maine. Due to the shortage of experienced scouts, these areas were not examined in 1946, but the necessary work will be performed during May and June, 1947. As a result of recent conferences between Forest Service officials and the district blister rust control leaders concerned, it was ascertained that additional areas on this forest in Maine and New Hampshire are in need of ribes eradication work, the details of which are outlined under the heading "Recommendations For Control Work During the Calendar Year 1947" on Page 43 of this report.

#### Green Mountain National Forest

Three areas in the towns of Leicester and Middlebury, Vt. were cleared of ribes during July and August, 1946 by a small crew under the supervision of District Leader Mulholland. Only 597 ribes were found on the 253 acres examined as a result of 21 man days labor. The average cost of this work was only 55 cents per acre which was primarily due to the low ribes factor.



Table 19 - Ribes Eradication Work on Green Mountain National Forest - 1946

Township	Type of Work	Acres Pine Protected	Total Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Cost		
						Wages	Expenses	Total
Leicester	All First	9	70	122	5	36.00	1.97	37.97
Middlebury	First	10	68	223	4	21.94	.28	22.22
	Second	25	115	252	12	71.85	.83	72.68
	Total	35	183	475	16	93.80	1.11	94.91
	First	19	138	345	9	57.94	8.25	66.19
Total	Second	25	115	252	12	71.85	.83	72.68
	Total	44	253	597	21	129.80	9.08	138.88

All of the wage costs were paid out of the Forest Service allotment of \$600. for control work during the fiscal year 1947, while the current requirement for an arbitrary charge for transportation and supplies furnished by the U. S. and P.Q.

Scarcity of labor in the Rutland, Vt. district prevented the completion of work planned on the Green Mountain Forest during the calendar year 1946. The unobligated balance of \$470.20 in the fiscal year 1947 allotment for control work on this forest will be more than adequate to complete the remaining three areas consisting of 320 acres in the towns of Goshen, Hancock and Wallingford.

#### Allegheny National Forest

District Leader DeBerti, of Pennsylvania, assisted the Forest Service by supervising the activities of one crew of 6-8 men assigned to ribes eradication work on the Allegheny National Forest during the period July 22-September 13, 1946. A total of 19,397 wild ribes were destroyed on the 1,037 acres contained as a result of 259 man days labor. All areas needing work in the southern portion of this forest were completed in 1946. This accomplishment was chiefly due to the fact that the services of a very good experienced foreman were obtained to direct the crew activities. The following table summarizes the results of the 1946 work on this forest.

Table 20 - Ribes Eradication Work on Allegheny National Forest - 1946

Area	Type of Work	Acres of Pine Protected	Total Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Hours	Cost		
						Wages	Expenses	Total
17 - Irvin Run	First	24	155	2285	296	\$211.20	-	\$211.20
17A - " "	"	19	95	843	104	105.60	-	105.60
21 - Clyde Run	"	5	70	3597	184	175.20	\$7.10	182.30
9 - Loleta	Second	8	167	1714	316	246.40	-	246.40
10 - Millstone	"	-	55	4607	192	150.80	7.00	157.80
13 - Mill Creek	"	19	165	961	196	146.00	-	146.00
15 - Phillipburg	"	39	170	2519	312	271.60	-	271.60
3 - Kelly Pine	Third	8	160	2371	360	261.60	-	261.60
Totals	First	48	320	6725	612	\$452.00	7.10	\$459.10
	Second	66	557	9801	1098	804.80	7.00	811.80
	Third	8	160	2871	360	261.60	-	261.60
	Total	122	1037	19,397	2070	\$1518.40	14.10	\$1532.50

\*In addition, charge of \$121.13 made for Forest Service Labor - 1946



Numerous ribes were found on the areas worked during 1946 and for this reason none was placed on maintenance.

It is expected that all of the ribes eradication work needed in the northern section of the Allegheny National Forest can be completed during May and June, 1947 with the unobligated balance of \$1346.17 from the 1947 allotment.

Table 21- Summary of All 1946 Ribes Eradication Work on National Forests

National Forest	Type of Work	Total Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
Green Mountain	First	138	345	9	2.5	.07	15.3
	Second	115	252	12	2.2	.10	9.6
	Total	253	597	21	2.4	.08	12.0
Allegheny	First	320	6,725	77	21.0	.24	4.2
	Second	557	9,801	137	17.6	.25	4.1
	Other	160	2,871	45	17.9	.28	3.6
	Total	1,037	19,397	259	18.7	.25	4.0
Total	First	458	7,070	86	15.4	.19	5.3
	Second	672	10,053	149	15.0	.22	4.5
	Other	160	2,871	45	17.9	.28	3.6
	Total	1,290	19,994	280	15.5	.22	4.6

#### Expenditures From Fiscal Year 1947 Allotments

Bi-weekly payrolls were prepared at the REC Regional Office for laborers employed on the Green Mountain and Allegheny National Forest projects during July-September, 1946. These payrolls were transmitted to the Boston Treasury Disbursing Office for payment and the obligations charged to our 3103.14 appropriation. The same procedure was followed in processing a few Form 1012 vouchers covering travel by personally-owned automobile on the Allegheny National Forest project. At the end of the season a Form 1080 transfer settlement voucher covering expenditures on each forest was submitted to the Forest Service regional office where they were processed.

The following summary shows the current status of the Forest Service allotments for the fiscal year 1947:

Forest	Total Allotment For Fiscal Year	Expenditures From 7/1-12/31/46			Unobligated Balance on 1/1/47
		Wages	Expenses	Total	
White Mountain	\$100.	0	0	0	\$100.00
Green Mountain	600.	\$129.80	0	\$129.80	470.20
Allegheny	3,000.	1,518.40	\$135.43*	1,653.83	1,346.17
Total	\$3,700.	\$1,648.20	\$135.43	\$1,783.63	\$1,916.37

\*Includes charge of \$121.13 for use of Forest Service truck assigned to project.



## Recommendations For Control Work During Calendar Year 1947

### White Mountain National Forest

The \$100. allotment for ribes eradication work on this forest will be used in May or June, 1947 to complete the scouting work recommended for two areas in Gilead and Stonham, Maine. There are 387 acres in the control areas on these two tracts, but only the most likely ribes sites comprising 107 acres will need examination.

During February, 1947 local Forest Service rangers and three blister rust control district leaders of Maine and New Hampshire held conferences and organized a resurvey of white pine areas on the White Mountain National Forest. As a result of the surveys, it was ascertained that ribes eradication work is needed on several tracts totalling 1030 acres which were not included in the control areas reported for 1946. In one case, it was found that a unit which was discontinued from the control area as a result of the 1943 survey should be returned to active control status. The Forest Supervisor recently submitted estimates to his regional office listing control needs during the fiscal year 1948 which included all units added to the control area as a result of the recent survey.

### Green Mountain National Forest

Initial control work will be conducted during May and June, 1947 on three areas comprising 320 acres in Goshen, Hancock, and Wallingford, Vt. There is an unobligated balance of \$470.20 in the fiscal year 1947 allotment to this forest which will be more than adequate to complete this work. The amount not needed for work on this forest could be used for some of the White Mountain National Forest work as outlined above.

No control work will be needed on the Green Mountain National Forest during the fiscal year 1948.

### Allegheny National Forest

It is anticipated that sufficient labor will be available so it will be possible to complete all ribes eradication work needed in the northern portion of the Allegheny National Forest during May and June, 1947 with the balance of \$1346.17 available from the current allotment. The work, which will be directed by District Leader DeBerti, involves the initial coverage of three areas totalling 286 acres and rework on five units comprising 1933 acres, or a total of 2,219 acres. If this work is completed on schedule, no additional work will be required on this forest during the fiscal year 1948.

### Status of Control Work

At the end of 1946, the net control area on the three national forests in this region aggregated 7,315 acres. Initial control work was complete on the White Mountain National Forest, but a total of 606 acres was in need of initial protection on the other two forests. Two thirds of the national forest control areas had been worked twice and third work had been performed on about 40% of the areas. However, only about a third of the control area had been eliminated



as being on a maintenance basis. Numerous ribes have been destroyed on many of the units, but it should be possible to place the majority of the acreage on maintenance after the next working. The following table lists detailed information on the status of control in each forest.

Table 22- Status of Ribes Eradication Work on Present Net Control Areas on National Forests  
(December 31, 1946)

National Forest	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Acreage Worked			Acreage Initial Work Still To Be Done	Acreage Now on Maintenance Basis	Percentage		
				First Work	Second Work	Other Workings			Worked Once	Worked Twice	On Maintenance
Moine	498	160	498	498	386	386	0	111	100.0	77.5	22.3
White M.	2948	927	2948	2948	2948	2367	0	2402	100.0	100.0	81.5
Total	3446	1087	3446	3446	3334	2753	0	2513	100.0	96.7	72.9
Green Mt.	573	89	573	253	115	-	320	0	44.2	20.1	0
Blue Mt.	3296	753	3296	3010	1409	662	286	0	91.3	42.7	0
Total	7315	1929	7315	6709	4858	3415	606	2513	91.7	66.4	34.4

The above data for the White Mountain National Forest do not include several new areas which were added during February, 1947. With these additions, the net control area on this Forest will be increased to 4,476 acres with initial work required on six units totalling 900 acres. It should be possible to complete all initial work and any necessary rework on all three forests during the calendar year 1947.



Table 23 - Ribes Eradication Work on National Forests, 1928-1946, Initial

Forest	Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Average Net Control Area Per Man Day
				Wild & Cult.	Cult. Only		Siber	Man Days	
White Mountain	Regular	Initial	6,891	182,581	-	562	25.5	.01	12.7
		Rework	8,517	19,088	-	379	2.2	.14	25.1
		Total	15,408	201,669	-	941	13.1	.05	17.1
	C.C.C.	Initial	1,950	633,866	85	2,125	325.1	1.19	0.4
		Rework	3,799	309,921	-	1,700	81.5	.55	2.6
		Total	5,749	943,787	85	4,015	152.1	.70	1.4
	Total	Initial	8,841	816,447	85	2,587	92.3	.33	1.3
		Rework	12,316	328,609	-	2,079	20.7	.17	5.0
		Total	21,157	1,145,056	85	4,666	57.1	.63	4.3
Green Mountain	All Regular	Initial	138	345	-	9	2.5	.07	15.5
		Rework	115	252	-	12	2.2	.10	9.5
		Total	253	597	-	21	2.4	.08	12.0
Allegheny	Regular	Initial	1,211	135,752	8	271	112.1	.22	4.4
		Rework	1,638	42,218	-	799	25.6	.24	4.1
		Total	2,849	177,970	8	670	62.5	.24	4.3
	C.C.C.	Initial	3,703	665,798	22	2,787	179.3	.75	1.3
		Rework	669	68,588	-	521	102.5	.78	3.3
		Total	4,372	734,386	22	3,308	166.0	.75	1.3
	Total	Initial	4,914	801,550	30	3,058	163.1	.62	1.5
		Rework	2,307	110,806	-	920	48.0	.63	2.3
		Total	7,221	912,356	30	3,978	125.3	.55	1.8
Total	Regular	Initial	8,240	318,678	8	842	35.7	.10	9.8
		Rework	10,270	61,558	-	700	6.0	.01	13.7
		Total	18,510	380,236	8	1,542	20.5	.09	11.6
	C.C.C.	Initial	5,653	1,299,664	107	2,112	229.9	.30	1.1
		Rework	4,468	378,109	-	2,221	84.6	.59	2.0
		Total	10,121	1,677,773	107	7,333	165.8	.72	1.4
	Total	Initial	13,893	1,618,342	115	5,954	116.3	.43	2.3
		Rework	14,738	439,667	-	2,971	29.8	.20	5.0
		Total	28,631	2,058,009	115	8,925	72.2	.31	3.8

In addition to the 138 acres of initial work listed for the Green Mountain National Forest in Table 23, 115 acres on this forest were initially cleared of ribes in connection with work on state and privately-owned lands prior to acquisition by the Government. The gross acreages worked on the White Mountain and Allegheny National Forests are somewhat greater than the present net control areas on these forests due to the discontinuance of several units from the control area during 1944-1946.



Table 24 - Expenditures For Blister Rust Control on National Forests  
1924-1946, Inclusive

Agency	White Mountain National Forest	Green Mountain National Forest	Allegheny National Forest	Total
Forest Service	\$3,701.00	\$129.80	\$2,552.47*	\$6,373.27
U. S. & P. Q.	-	9.08	109.90	118.98
U. S. I.	75.63	-	207.85	283.48
State of New Hampshire	357.61	-	-	357.61
C. C. C.	8,096.47	-	7,125.69	15,222.16
Total	\$12,230.71	\$138.88	\$2,988.91	\$22,358.50

\*Does not include charge of \$121.13 for use of Forest Service truck on project during July-September, 1946. Information on this charge was not received until after financial summaries for calendar year 1946 were completed. This obligation will be added to expenditures for calendar year 1947.

Costs listed in Table 24 do not include any charges for supervisory activities of employees of the Forest Service, Bureau of Plant Industry and Bureau of Entomology and Plant Quarantine. The C.C.C. costs were computed on an arbitrary basis for the time the enlisted men actually spent on the project, actual cost of technical foreman, and estimated costs of transportation for the entire C.C.C. personnel assigned to the work.



## PART V

### BLISTER RUST CONTROL ON NATIONAL PARKS IN NORTHEASTERN REGION

#### FINANCIAL PROJECT AREA

Acadia National Park on Mount Desert Island in Maine is now the only area under the jurisdiction of the National Park Service in the Northeastern Region where a cooperative program for the control of white pine blister rust is maintained. The Hickory Run Recreational Demonstration Area in Carbon County, Pennsylvania was transferred to the State early in 1946 and future control work on this tract will be conducted in connection with such activities on state and privately-owned lands.

The control project at Acadia National Park was initiated in 1923 and as a result of the ribes eradication work performed since that time the entire control area of 16,872 acres is now on a maintenance basis. Field studies and general observations indicate that very little new infection occurred on the pines after the areas were cleared of ribes. Most of the younger pines infected prior to initial control work were killed by the rust and have gradually disappeared from the stands. However, damage resulting from early infection of the older and larger pines, which die very slowly from the disease, is noticeable in many sections of the Park. Very little infection can be found on the young reproduction. The effectiveness of the control work is also evidenced by the small amount of ribes regrowth found on the second and third workings. As indicated in Table 25, an average of only 3.5 bushes per acre have been destroyed on all second workings and 1.1 bushes per acre on the third workings as compared with an average of 43.2 ribes per acre for all initial work.

#### Ribes Eradication Work During Calendar Year 1946

One checker and a laborer were employed by the Park Service on ribes scouting work for 137 man days during the period June 10 to September 6, 1946. These men scouted 21 control units, comprising 4345 acres, which had been worked only once previously. In each instance at least five years had elapsed since the initial work was performed. Only 545 ribes, or an average of slightly more than 0.1 of a bush per acre were found on the areas scouted during 1946 which involved a systematic examination of the most likely ribes sites such as roadsides, walls, fence rows, swamps, stream courses, base of ledges, etc. Occasional strips were also run in intervening areas where sites were not generally favorable for ribes. This procedure resulted in production at an average of 31.7 acres per man day as compared with 9.6 acres per man day in 1945 when one checker and a five-man crew were assigned to the project.

Total Park Service expenditures for the 1946 scouting work amounted to \$1,074.64, of which \$960.45 was for wages and \$114.19 for repairs and operation costs of the truck assigned to the project. Based on total expenditures, the average cost of the 1946 work was 24.7 cents per acre. Technical supervision for work in the Park is provided by the District Leader located at Bangor, Maine. In this capacity he assists the Park Superintendent with the project planning and direction, following through with training and regular inspections of the work and maintenance of the pertinent maps and records.



## Blister Rust Canker Elimination Work During 1946

The Park Service has adopted a policy of limiting blister rust canker elimination work at Acadia Park to valuable white pines which are important as individuals or in small groups in developed areas. Funds were allotted for the employment of two men on such activities for approximately four months during the fiscal year 1947. This work was started in the vicinity of Old Farm on October 30, 1946. Due to inclement weather, the men are not able to work full time so the funds allotted apparently will be adequate to cover their services until about May 10, 1947. In addition to the Old Farm area, work will be performed in the larger group of old white pine in the area between Bear Hill and Bear Brook and in the developed part of the Bear Brook Picnic Area.

The results of blister rust canker elimination work performed during the period October 30 to December 28, 1946 were as follows:

Total number pines examined.....	227
Number fatally infected pines cut down.....	22
Number pines treated for infection.....	85
(Branch.....)	250
Number cankers removed (Stem.....)	340
Total man days.....	73

\*Includes stem-cankered tops cut off from 24 large pines.

A number of the large pines in the Old Farm area are completely girdled by blister rust making it impossible to save them. These trees are being left standing for the time being. Pines with trunk cankers in the upper portion of the stem which have live branches below the infections are being topped. Many of the large trees in this area are being saved by carving out the infected bark of the trunk infection.

Park Service expenditures on the blister rust canker elimination project during the period October 30 to December 28, 1946 amounted to \$525.61. Of this total, \$503.53 was for wages, \$18.43 for tools and supplies, and \$3.65 for truck expenses.

## Total Expenditures During Calendar Year 1946

<u>Ribes Eradication:</u>	<u>June</u>	<u>July-Sept.</u>	<u>Total</u>
Gross salary of checker.....	\$121.16	\$501.79	\$622.95
Gross wages of laborer.....	75.00	262.50	337.50
Operating expenses and repairs to truck.....	63.74	50.45	114.19
Totals.....	\$259.90	\$814.74	\$1074.64

<u>Canker Elimination (October 30 to December 28, 1946)</u>	<u>Total</u>
Gross wages of skilled workman.....	\$317.90
Gross wages of laborer.....	185.63
Operating expenses and repairs to truck.....	3.65
Purchase of tools and supplies.....	18.43
Total.....	\$525.61

Total Expenditures.....\$1,600.25



There was an unobligated balance of \$1,845.77 in the blister rust control allotment for the fiscal year 1947 at Acadia Park as of December 31, 1946.

Status of Ribes Eradication Work at Acadia National Park  
December 31, 1946

Total acreage of control area.....	15,872
Estimated acreage of white pine in net control area.....	3,200
(First work.....)	15,872
Acreage worked (Second work.....)	15,616
(Third work.....)	4,979
Acreage now on maintenance.....	15,872
(Worked once.....)	100.0
Percentage of control area (Worked twice.....)	92.5
(Worked three times.....)	29.5
(On maintenance.....)	100.0

Recommendations For Future Control Work

Balance of Fiscal Year 1947

The entire control area on the Park is now on a maintenance basis, but in order to assure the continuance of this safe condition the areas should be examined periodically to determine the ribes condition and eliminate any regrowth which menaces the white pines. There are areas totalling 1256 acres which have been worked only once, while 15,616 acres have been worked twice and 4979 acres three times since 1929.

The funds available for the last half of the fiscal year 1947 will be adequate to cover the wages of the two men now assigned to the canker elimination work until about May 10th and employ one checker and a laborer on ribes scouting for the balance of the fiscal year. Due to inclement weather, the men employed on the canker elimination project cannot work full time and the resulting savings in their wages should be adequate to cover any non-labor expenses up to June 30th.

It is recommended that the 1256 acres referred to above be scouted during May and June, 1947. If these areas are completed prior to the end of June, work can be performed in some of the areas listed for examination during the fiscal year 1948.

Fiscal Year 1948

In addition to the 1256 acres scheduled for scout work during May and June, 1947, there are 3,093 acres in the control area at Acadia Park where no control work has been performed for over five years. It is recommended that these areas be scouted during the period July-September, 1947.

If two men are assigned to the canker elimination project from September-December, 1947, it should be possible to complete scout work in all of the areas outlined in R. W. Smith's memorandum of May 31, 1946 to Superintendent Gilling.



It is recommended that \$2400. be allotted for blister rust control work at Acadia National Park during the fiscal year 1948. This amount would be sufficient to employ an SF-5 checker and one laborer on ribes scouting work from July 1 to September 12, 1947 and a skilled tree worker with one laborer on blister rust canker elimination work from September 15-December 31, 1947.

The following statement lists the estimated costs of the proposed control work at Acadia Park during the fiscal year 1948:

Estimated Cost of Ribes Scouting Work  
(July 1-September 12, 1947)

<u>Wages</u>	
One SF-5 checker @ \$2394. per annum.....	\$497.34
One scout @ 90¢ per hour.....	388.80
Total wages.....	\$886.14
Expenses.....	213.86
Total.....	\$1100.00

Estimated Cost of Blister Rust Canker Elimination Work  
(September 15-December 31, 1947)

<u>Wages</u>	
One skilled tree worker @ \$1.10 per hour.....	\$686.40
One laborer @ 75¢ per hour.....	468.00
Total wages.....	\$1154.40
Expenses.....	145.60
Total.....	\$1300.00

Total for fiscal year 1948.....	\$2400.00
---------------------------------	-----------

Under the five-year plan for blister rust control work on National Park Service lands in this region, control maintenance and canker elimination work is annually scheduled for Acadia Park during the fiscal years 1947-1951, inclusive. However, if the control work recommended for the fiscal year 1947 is completed on schedule, no further control work should be necessary on this Park for at least two years unless canker elimination work in additional areas is desired.



Table 25 - Ribes Eradication Work at Acadia National Park  
1929-1946, Inclusive

Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acreage Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Regular	First	7,726	503,920	-	2,798	65.2	.16	2.8
	Second	7,476	24,125	1	854	3.2	.11	8.0
	Third	4,979	5,493	1	578	1.1	.12	6.6
	Total	20,181	533,538	2	4,230	26.4	.21	4.7
C.C.C.	First	12,990	390,020	293	8,429	30.0	.65	1.5
	Second	9,427	35,191	-	3,564	3.7	.38	2.8
	Total	22,417	425,211	293	11,993	18.0	.53	1.9
All	First	20,716	893,940	293	11,227	43.2	.58	1.8
	Second	16,903	59,316	1	4,418	3.5	.36	3.6
	Third	4,979	5,493	1	578	1.1	.12	6.6
	Total	42,598	958,749	295	16,223	22.5	.50	2.2

Table 26 - Blister Rust Control Elimination Work at Acadia National Park  
(Work performed during period 1932-1939, inclusive, and 1946)

Program	Total No. Pines Examined	No. Infected Pine Cut Down	No. Infected Pines From Which Cankers Removed	No. Cankers Removed		Total Man Days
				Branch	Stem	
Regular	2,773	341	500	1,730	95	171
C.C.C.	58,261	2,957	8,879	27,054	2,691	2,177
All	61,034	3,298	9,679	28,784	2,786	2,350

Table 27 - Total Expenditures For Blister Rust Control at Acadia National Park  
1929-1946, Inclusive

Park Service	Bureau of Plant Industry	C.C.C.	Total
\$21,195.76	\$3,145.83	\$29,480.36	\$53,821.95

The costs for the control project at Acadia National Park do not include any charges for the supervisory activities of employees of the Park Service, Bureau of Plant Industry and Bureau of Entomology and Plant Quarantine.

C.C.C. costs were computed on the basis of arbitrary charges for the 100 enlisted men spent on the project, actual cost of technical personnel and materials and estimated costs of transportation for all C.C.C. personnel assigned to the project.



PART VI

APPENDIX

<u>Informational and Service Activities</u>	<u>Page</u>
By States, 1923-1946.....	53
<u>Local Cooperation</u>	
By States During 1946.....	54
By States, 1918-1946.....	54
<u>Control Area Mapping</u>	
By States During 1946.....	55
By States, 1933-1946.....	55
By Programs, 1933-1946.....	56
Status on December 31, 1946.....	56
<u>Ribes Eradication</u>	
By States and Land Ownership Classes During 1946.....	57-59
By States, 1918-1946.....	60
By Programs, 1918-1946.....	61
By Land Ownership Classes, 1918-1946.....	62
Status on December 31, 1946 by States and Land Ownership Classes..	63
<u>Status of Blister Rust Control Work</u>	
By States and Districts - December 31, 1946.....	64
<u>Nursery Sanitation</u>	
By States During 1946.....	65
By States, 1930-1946.....	66
By Programs, 1930-1946.....	67
Status on December 31, 1946.....	67
List of Nurseries Maintaining Sanitation Zones.....	68-69
<u>Ribes Nigrum Elimination</u>	
By States, 1928-1946.....	70
By Programs, 1928-1946.....	70
Status on December 31, 1946.....	70
<u>Cultivated Ribes Compensation</u>	
By States, 1918-1946.....	71
<u>Blister Rust Canker Elimination</u>	
By States During 1946.....	71
By States and Programs, 1932-1946.....	72
By Land Ownership Classes, 1932-1946.....	72
<u>Total Expenditures for Blister Rust Control</u>	
All Agencies, by States, During Calendar Year 1946.....	73
All Agencies, by States, 1918-1946, Inclusive.....	74



Table 28- Informational and Service Activities of Permanent and Temporary District Leaders During Period 1923-1946, Inclusive

Informational Activities

State	Meetings Addressed		Items Published	Displays Placed
	No.	Attendance		
Maine	1,375	38,017	610	1,093
N.H.	3,730	216,818	4,402	2,146
Vermont	1,052	36,815	677	913
Mass.	1,059	49,702	2,174	875
R.I.	269	20,550	408	132
Conn.	121	4,239	646	166
N.Y.	2,073	167,197	2,862	812
Penna.	33	3,520	44	85
All States	9,712	536,858	11,823	6,195

Service Activities

State	Initial Interviews	Follow-up Calls	Persons Instructed in Field
Maine	34,802	14,036	22,140
N.H.	40,723	40,331	22,843
Vermont	15,710	11,788	10,419
Mass.	36,874	13,478	12,564
R.I.	3,888	3,247	723
Conn.	4,869	3,608	1,732
N.Y.	37,697	28,375	26,287
Penna.	2,139	419	2,307
All States	176,702	115,282	99,035



Table 29 - Local Cooperation on Blister Rust Control Work During 1946

State	Individual Cooperation			Town Cooperation			County Cooperation				Value of Additional Contributed Services
	No. Cooperators (all on Ribes erad.)	Amount Spent By Individual Cooperators	Appropriations		No. Contributions	Amount Town Money Expended	Appropriations		Amount Expended		
			No.	Amount			No.	Amount Approp.			
Maine	-	-	51*	8,950.00	-	6,519.89	-	-	-	-	-
N.H.	-	-	84*	24,927.00	-	18,154.13	-	-	-	-	-
Vt.	1	67.20	30	6,500.00	-	6,290.89	-	-	-	-	-
Mass.	17	3,799.35	-	-	2	41.00	-	-	-	-	-
Conn.	1	229.60	16	2,278.00	-	408.80	-	-	-	-	-
N.Y.	1	518.56	-	-	-	-	12	14,518.	14,166.66	1200.00	1200.00
All States	20	4,614.71	181	42,655.00	2	31,414.71	12	14,518.	14,166.66	1200.00	1200.00

\*Includes 9 appropriations totalling \$1400. carried over from 1945

\*\*Includes 16 appropriations totalling \$4211. carried over from 1945 and 8 compulsory appropriations amounting to \$3116.

Table 30 - Local Cooperation on Blister Rust Control Work, 1918-1946, Inclusive

State	Individual Cooperation			Town Cooperation			County Cooperation			
	No. Cooperators		Amount Spent By Individual Cooperators	No. Town		Amount Town Money Expended	County Cooperation		Amount Spent by Counties	
	Ribes Erad.	Center Blight.		Appropriations	Contributions		No. County Allotments or Appropriations	Amount		
Maine	11,104	25	25,354.48	988	20	162,208.20	-	-	-	-
N.H.	693	-	49,031.17	1597	20	465,072.61	6	1,724.00	-	-
Vt.	2,353	12	75,132.74	108	64	42,999.67	-	-	-	-
Mass.	21,659	-	105,992.44	4	59	24,266.24	-	-	-	-
R.I.	8	-	581.35	-	-	-	-	-	-	-
Conn.	509	-	10,218.59	104	51	29,743.06	-	-	-	-
N.Y.	5,976	1	175,348.69	29	3	9,422.78	89	98,373.18	-	-
Penns.	303	-	2,273.36	-	-	-	-	-	-	-
All States	42,805	38	503,932.83	2830	217	736,712.56	95	100,097.26	-	-



Table 31 - Control Area Mapping Work During 1946  
(All on state and privately-owned lands)

State	Acreage in Control Area			Additional Acreage Examined But Not Mapped			Total Man Days
	Initially Mapped	Remapped	Total	Inside Control Area	Outside Control Area	Total	
Maine	33,455	11,951	45,406	39,721	59	39,780	446
N. H.	47,140	13,043	60,183	160,007	7,755	167,762	1,646
Vt.	3,745	7,039	10,784	138,190	20,919	159,109	513
Mass.	48,349	29,346	77,695	98,976	-	98,976	333
R. I.	7,732	8,541	16,273	50,573	-	50,573	386
Conn.	-	51,037	51,037	45,222	-	45,222	565
N. Y.	62,645	25,903	88,548	292,321	203,777	496,098	2,355
Penna.	4,375	36,036	40,411	29,718	50,065	79,783	352
All States	207,441	182,896	390,337	854,728	282,575	1,137,303	6,624

Table 32 - Control Area Mapping During Period 1933-1945, Inclusive  
By States

State	Total Acreage Reported Mapped*	Net Acreage Detail Mapped in Present Control Area	Additional Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Painted***	Total Man Days
Maine	2,335,319	2,089,166	4,802,749	1,808 1/2	37,892
N. H.	1,570,818	1,403,300	458,454	-	43,312
Vt.	1,678,747	711,986	4,175,534	828	23,683
Mass.	1,095,759	951,656	1,340,791	1,230	21,721
R. I.	257,058	131,113	63,586	-	2,513
Conn.	830,861	474,502	2,702,367	3,202 1/2	26,194
N. Y.	4,441,305	1,945,761	3,437,147	2,403 1/2	48,362
Penna.	888,060	672,242	81,783**	7,369	45,367
All States	13,097,927	8,379,726	17,062,411	16,901	248,746

\* This acreage includes a large amount of remapping, especially in Vermont, Connecticut and New York. It also includes areas which were mapped and subsequently discontinued from the control area.

\*\* Several hundred thousand additional acres of non-pine land were also examined but not mapped in Pennsylvania -- no record was kept of this acreage.

\*\*\* No record kept of this item after 1945.



Table 33 - Control Area Mapping Work During Period 1931-1946, Inclusive  
By Programs

Program	Total Acreage Reported Mapped	Acreage Examined But Not Mapped	Miles Control Area Boundary Lines Painted	Total Man Days
Cooperative	1,198,133	2,005,064	4 $\frac{1}{2}$	12,849
C. C. C.	999,838	364,002	2,630	38,265
F. W. A.	744,663	942,528	227	6,915
F. P. A. (F. A.)	9,239,070	11,177,457	10,678 $\frac{1}{2}$	159,244
F. P. A. (State)	656,491	399,852	3,361 $\frac{1}{2}$	26,676
K. L. A.	213,971	2,139,370	-	4,205
C. S. I.	45,761	34,138	-	592
All Programs	13,097,927	17,062,411	16,901	248,746

Table 34 - Status of Control Area Mapping Work - December 31, 1946

State	Total Acreage of Net Control Area	Acreage Detail Mapped in Net Control Area	% Net Control Area Detail Mapped
Maine	2,473,948	2,089,166	84.4
N. H.	3,027,483	1,403,300	46.4
Vt.	738,584	711,986	96.4
Mass.	1,662,073	951,656	57.3
R. I.	162,407	131,113	80.7
Conn.	474,502	474,502	100.0
N. Y.	2,873,341	1,945,761	67.7
N. J.	16,742	0	0
Penna.	753,064	672,242	89.3
All States	12,182,144	8,379,726	68.8



Table 35 - Ribes Eradication Work During 1946 By States and Land Ownership Classes

Initial Control Work

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Average Ribes Per Acre
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	All State & Private	47,269	392,051	401	3,019	8.3	.06	18.7
N. H.	"	23,551	352,308	187	3,167	15.0	.13	1.4
Vt.	State & Private	18,620	221,235	34	2,205	11.9	.12	8.9
	Green Mt. Nat. Forest	138	345	-	9	2.5	.07	15.3
	Total	18,758	221,580	34	2,214	11.8	.12	8.9
Mass.	All State & Private	17,797	25,127	1,204	652	1.4	.04	21.7
N. Y.	"	74,650	1,083,884	2,190	8,303	14.5	.11	9.0
Penns.	State & Private	39,514	386,384	312	5,259	9.8	.13	7.5
	Allegheny Nat. Forest	320	6,725	-	77	21.0	.24	4.2
	Total	39,834	393,109	312	5,336	9.9	.13	7.5
All States	State & Private	221,401	2,460,989	4,328	22,605	11.1	.10	7.6
	National Forests	458	7,070	-	86	15.4	.19	5.3
	Total	221,859	2,468,059	4,328	22,691	11.1	.10	7.6

Second Workings

Maine	State & Private	110,861	563,246	53	5,636	5.1	.05	19.5
	Acadia Nat. Park	4,345	515	-	137	0.1	.03	31.7
	Total	115,206	563,761	53	5,823	4.9	.05	19.5
N. H.	All State & Private	43,596	299,211	305	5,575	6.9	.13	1.8
Vt.	State & Private	14,910	99,869	34	1,932	6.7	.13	1.7
	Green Mt. Nat. Forest	115	252	-	12	2.2	.10	3.9
	Total	15,025	100,121	34	1,944	6.7	.13	1.7
Mass.	All State & Private	42,023	86,686	405	2,434	2.1	.06	17.3
N. I.	"	7,486	1,905	-	251	0.3	.03	21.5
N. Y.	"	187,078	880,017	1,107	13,121	4.7	.07	14.7
Penns.	State & Private	7,275	42,146	2	807	5.8	.11	9.0
	Allegheny Nat. Forest	557	9,801	-	137	17.6	.25	4.1
	Total	7,832	51,947	2	944	6.6	.12	8.3
All States	State & Private	413,229	1,973,080	1,906	29,806	4.8	.07	21.9
	National Forests	672	10,053	-	149	15.0	.22	4.5
	National Park	4,345	515	-	137	0.1	.03	31.7
	Total	418,246	1,983,648	1,906	30,092	4.7	.07	21.9



Table 33 (Continued) - Ribes Eradication Work During 1946 By States and Land Ownership ClassesThird and Other Workings

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	All State & Private	3,859	1,440	-	64	0.4	.02	60.3
N. H.	"	14,189	53,996	67	1,334	3.8	.09	10.6
Vt.	"	2,923	20,664	-	480	7.1	.16	6.1
N. J.	"	15,541	14,534	67	657	0.9	.04	23.7
R. I.	"	5,069	1,663	-	179	0.3	.04	28.3
Conn.	"	45,643	38,893	-	1,209	0.9	.03	37.8
N. Y.	"	134,820	401,420	332	8,141	3.0	.06	16.6
Penn.	State & Private	174	2,021	-	30	11.6	.17	5.8
	Allegheny Nat. Forest	160	2,871	-	45	17.9	.28	3.6
	Total	334	4,892	-	75	14.6	.22	4.5
All States	State & Private	222,218	534,631	466	12,094	2.4	.05	18.4
	National Forest	160	2,871	-	45	17.9	.28	3.6
	Total	222,378	537,502	466	12,139	2.4	.05	18.3

All Work

Maine	State & Private	161,989	956,737	454	8,769	5.9	.05	18.5
	Acadia Nat. Park	4,345	515	-	137	0.1	.03	31.7
	Total	166,334	957,252	454	8,906	5.8	.05	18.7
N. H.	All State & Private	81,336	705,515	559	10,076	8.7	.12	8.1
Vt.	State & Private	36,453	341,768	68	4,617	9.4	.13	7.9
	Green Mt. Nat. Forest	253	597	-	21	2.4	.08	12.0
	Total	36,706	342,365	68	4,638	9.3	.13	7.9
N. J.	All State & Private	75,361	126,347	1676	3,743	1.7	.05	20.1
R. I.	"	12,555	3,568	-	430	0.3	.03	29.2
Conn.	"	45,643	38,893	-	1,209	0.9	.03	37.8
N. Y.	"	396,548	2,365,321	3629	29,565	6.0	.07	13.4
Penn.	State & Private	46,963	430,551	314	6,096	9.2	.13	7.7
	Allegheny Nat. Forest	1,037	19,397	-	259	18.7	.28	4.0
	Total	48,000	449,948	314	6,355	9.4	.13	7.6
All States	State & Private	856,848	4,968,700	6700	64,505	5.8	.075	13.3
	National Forests	1,290	19,994	-	280	15.5	.22	4.6
	National Park	4,345	515	-	137	0.1	.03	31.7
	Total	862,483	4,989,209	6700	64,922	5.8	.075	13.3



Table 36 - Ribes Eradication Work on Maintenance Areas During 1946

State	Land Ownership Class	Type of Work	Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	Per Acre		Average per Day
						Ribes	Man Days	
Line	All on Acadia National Park	All Second	4,345	515	137	0.1	.03	31.1
I.	All on State & Private	Second	7,486	1,905	251	0.3	.03	25.8
		Other	5,069	1,663	179	0.3	.04	25.1
		Total	12,555	3,568	430	0.3	.03	25.2
Conn.	"	All Other	45,643	38,893	1,209	0.9	.03	37.4
Y.	"	Second	1,805	2,781	134	1.5	.07	13.9
		Other	15,940	27,726	746	1.7	.05	21.4
		Total	17,745	30,509	880	1.7	.02	21.2
anna.	"	All Second	1,639	729	144	0.4	.09	11.4
All States	National Park	"	4,345	515	137	0.1	.03	31.1
	State and Private	Second	10,930	5,415	529	0.5	.05	25.7
		Other	66,652	68,284	2,134	1.0	.03	31.2
		Total	77,582	73,699	2,663	0.9	.03	25.1
	All	Second	15,275	5,930	666	0.4	.04	28.9
		Other	66,652	68,284	2,134	1.0	.03	31.2
		Total	81,927	74,214	2,800	0.9	.03	28.3



Table 37 - Ribes Eradication Work, 1913-1945, Inclusive  
By States

State	Type of Work	Gross Acreage Reported Worked	No. of Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
Maine	First	2,464,867	46,976,053	259,658	19.1	.11	9.5
	Second	998,886	13,863,127	149,893	13.9	.15	6.7
	Other	49,587	234,434	2,469	4.7	.05	20.1
	Total	3,513,340	61,073,614	412,020	17.4	.12	8.5
N.H.	First	3,222,658	57,248,276	305,159	17.8	.09	10.6
	Second	971,917	12,463,207	118,702	12.8	.12	8.2
	Other	66,876	338,373	7,976	5.1	.12	8.4
	Total	4,261,451	70,049,856	431,837	16.4	.10	9.9
Vt.	First	528,876	12,198,696	125,013	23.1	.24	4.2
	Second	193,452	2,983,872	46,212	15.4	.24	4.2
	Other	15,985	88,586	2,459	5.5	.15	6.5
	Total	738,313	15,276,154	173,684	20.7	.24	4.3
Mass.	First	2,067,029	16,855,388	130,221	8.2	.06	15.9
	Second	1,128,161	5,916,951	94,272	5.2	.08	12.0
	Other	120,964	172,668	4,791	1.4	.04	25.2
	Total	3,316,154	22,945,007	229,284	6.9	.07	14.5
R. I.	First	330,050	269,502	21,251	0.8	.06	15.5
	Second	309,890	374,845	53,551	1.2	.17	5.8
	Other	32,585	12,669	2,173	0.4	.07	15.0
	Total	672,525	657,016	76,975	1.0	.11	8.7
Conn.	First	444,293	2,496,108	39,773	5.6	.03	11.2
	Second	446,463	4,887,882	92,925	10.9	.21	4.8
	Other	125,271	142,409	4,686	1.1	.04	26.7
	Total	1,016,027	7,526,399	137,384	7.4	.14	7.4
N.Y.	First	2,716,987	64,243,188	706,202	23.6	.26	3.8
	Second	1,326,901	11,840,322	205,861	8.9	.16	6.4
	Other	430,069	1,198,592	24,015	2.8	.06	17.9
	Total	4,473,957	77,282,102	936,078	17.3	.21	4.8
N.J.	First	16,742	49,493	1,324	3.0	.08	12.6
	Second	1,417	16,971	392	12.0	.28	3.6
	Total	18,159	66,464	1,716	3.7	.09	10.6
Penn.	First	687,178	33,550,767	329,129	48.8	.48	2.1
	Second	225,540	5,559,266	156,851	24.6	.70	1.4
	Other	31,320	229,748	2,680	7.3	.09	11.7
	Total	944,108	39,339,781	488,660	41.7	.52	1.9
All States	First	12,478,680	233,887,471	1,917,730	18.7	.15	6.5
	Second	5,602,627	57,911,443	918,659	10.3	.16	6.1
	Other	872,727	2,417,479	51,249	2.8	.06	17.0
	Total	18,954,034	294,216,393	2,887,638	15.5	.15	6.6

The data for Table 37 were compiled from the state leaders' annual statistical reports. In 1937 and 1942, certain adjustments were made in the acreage figures for Maine, Vermont and Connecticut in order to make the data agree with the permanent CO-105 records.



Table 38 - Ribes Eradication Work, 1918-1946, Inclusive  
By Program

Program	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acreage Worked Per Man Day
			Wild & Cult.	Cult. Only		Ribes	Man Days	
Regular Cooperative	Initial	8,815,105	109,611,930	619,263	714,870	12.4	.05	12.3
	Rework	3,486,092	17,461,453	32,126	221,843	5.0	.06	15.7
	Total	12,301,197	127,073,383	651,389	936,713	10.3	.08	11.1
C.C.C.	Initial	1,379,998	49,844,058	75,026	683,975	36.1	.50	2.0
	Rework	1,200,607	16,712,360	18,368	453,740	13.9	.36	2.2
	Total	2,580,605	66,556,418	93,394	1,137,715	25.8	.44	2.3
S.C.S.	Initial	20,451	651,804	360	9,944	31.9	.19	2.1
	Rework	10,120	15,830	-	2,485	1.9	.25	4.1
	Total	30,571	670,634	360	12,429	21.9	.41	2.0
W.P.A. (F.A.)	Initial	1,927,319	64,062,297	85,141	455,305	33.2	.24	4.2
	Rework	1,479,148	23,786,417	32,843	258,265	16.1	.17	5.7
	Total	3,406,467	87,848,714	117,984	713,570	25.8	.21	4.8
W.P.A. (State)	Initial	90,665	1,757,703	2,832	11,827	19.4	.13	1.7
	Rework	154,784	797,288	2,427	13,310	5.2	.09	11.0
	Total	245,449	2,554,991	5,319	25,137	10.4	.10	5.0
P.W.A.	Initial	179,970	7,646,550	7,297	33,419	42.5	.19	5.4
	Rework	162,541	1,373,778	5,379	16,156	8.5	.10	10.1
	Total	342,511	9,020,328	12,676	49,575	26.3	.14	6.9
C.W.A. & E.R.A.	Initial	20,547	175,737	1,600	4,500	8.6	.22	4.6
	Rework	7,704	158,892	306	3,270	20.6	.42	2.4
	Total	28,251	334,629	1,906	7,770	11.8	.28	3.6
A.R.A.	Initial	10,639	113,439	948	3,564	10.7	.33	3.0
	Rework	5,714	13,889	110	772	2.4	.14	7.4
	Total	16,353	127,328	1,058	4,336	7.8	.27	3.8
N.Y.A.	Initial	373	4,280	-	85	11.5	.23	4.4
	Rework	555	4,741	-	31	8.5	.06	17.9
	Total	928	9,021	-	116	9.7	.13	6.0
N.V.S.	Initial	1,416	19,673	65	241	13.9	.17	5.9
	Rework	286	1,274	54	36	4.5	.13	7.9
	Total	1,702	20,947	119	277	12.3	.16	6.1
All Programs	Initial	12,446,483	233,887,471	792,592	1,917,730	18.8	.15	6.5
	Rework	6,507,551	60,328,922	91,613	967,908	9.3	.15	6.1
	Total	18,954,034	294,216,393	884,205	2,885,638	15.5	.15	6.3

In Table 38 summarizing the ribes eradication work by programs, it was not possible to make the adjustments in the gross acreages reported worked which are indicated for Table 37.

In Table G (Page 38 of the 1946 omnibus tables) the data for the "Regular and Cooperative Program" include work under the A.R.A. Program as well as the Regular Cooperative Program as shown in Table 38 above.



Table 39 - Ribes Eradication Work, 1918-1946, Inclusive  
By Land Ownership Classes

Ownership Class	Type of Work	Gross Acreage Reported Worked	No. Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acre Worked Per Man Day	
					Ribes	Man Days		
State and Privately Owned Lands	First	12,439,271	231,300,189	1,899,231	18.6	.15	6.5	
	Second	5,576,418	57,436,827	911,706	10.3	.16	6.1	
	Other	862,316	2,387,619	50,235	2.8	.06	17.2	
	Total	18,878,005	291,124,635	2,861,172	15.4	.15	6.6	
National Forests	White Mountain	First	8,841	816,447	2,887	92.3	.33	3.1
		Second	7,546	318,091	1,828	42.2	.24	4.1
		Other	4,770	10,518	211	2.2	.04	22.6
		Total	21,157	1,145,056	4,926	54.1	.23	4.3
	Green Mountain	First	138	345	9	2.5	.07	15.3
		Second	115	252	12	2.2	.10	9.6
		Total	253	597	21	2.4	.08	12.0
	Allegheny	First	4,914	801,550	3,058	163.1	.62	1.6
		Second	1,645	96,957	695	58.9	.42	2.4
		Other	662	13,849	225	20.9	.34	2.9
		Total	7,221	912,356	3,978	126.3	.55	1.8
	Total	First	13,893	1,618,342	5,954	116.5	.43	2.3
		Second	9,306	415,300	2,535	44.6	.27	3.7
		Other	5,432	24,367	436	4.5	.08	12.5
		Total	28,631	2,058,009	8,925	71.9	.31	3.2
	National Parks	Acadia	First	20,716	893,940	11,227	43.2	.54
Second			16,903	59,316	4,418	3.5	.26	3.8
Other			4,979	5,493	578	1.1	.12	8.6
Total			42,598	958,749	16,223	22.5	.38	2.6
Hickory Run Res. Area		All First	4,800	75,000	1,318	15.6	.27	3.6
Total		First	25,516	968,940	12,545	38.0	.49	2.0
		Second	16,903	59,316	4,418	3.5	.26	3.8
		Other	4,979	5,493	578	1.1	.12	8.6
		Total	47,398	1,033,749	17,541	21.8	.37	2.7
All Classes		First	12,478,680	233,887,471	1,917,730	18.7	.15	6.5
	Second	5,602,627	57,911,443	918,659	10.3	.16	6.1	
	Other	872,727	2,417,419	51,242	2.8	.06	17.0	
	Total	18,954,034	294,216,393	2,887,638	15.5	.15	6.6	



Table 40 - Status of Ribes Eradication Work in Present Net Control Area in Northeastern Region

December 31, 1946

By State

State	Acreage of White Pine in Net Control Area	Total Acreage of Net Control Area	Acreage Worked			Acreage of Initial Work Still To Be Done	Acreage Now Requiring Examination To Determine Need For Rework	Acreage Now On Main-tenance Basis	% Net Control Area		
			First Work	Second Work	Other Workings				Worked Once	Worked Twice	On Main-tenance
Maine	958,200	2,473,948	2,200,902	1,027,521	49,747	273,046	1,578,172	443,376	89.0	41.5	17.9
N. H.	1,343,510	3,027,483	2,809,892	906,585	63,067	217,591	2,023,642	430,882	92.8	29.9	14.2
Vt.	158,720	738,584	471,364	179,168	16,285	267,220	157,384	102,364	63.8	24.3	13.9
Mass.	598,955	1,662,073	1,617,011	994,548	121,002	45,062	435,429	938,725	97.3	59.8	56.5
R. I.	71,256	162,407	162,407	150,903	34,068	0	0	162,407	100.0	92.9	100.0
Conn.	84,658	474,502	474,502	311,927	121,267	0	2,419	472,083	100.0	65.7	99.5
N. Y.	828,893	2,873,341	2,404,864	1,278,920	375,647	468,477	978,429	621,651	83.7	44.5	21.6
N. J.	3,771	16,742	16,742	1,417	0	0	0	16,742	100.0	8.5	100.0
Penna.	139,569	753,064	604,822	143,037	31,187	148,242	432,229	114,725	80.3	19.0	15.2
All States	4,187,532	12,182,144	10,762,506	4,994,026	812,270	1,419,638	5,607,704	3,302,955	88.3	41.0	27.1

Land Operable Classes

State and Private Lands	4,182,403	12,157,957	10,738,925	4,973,552	803,876	1,419,032	5,605,384	3,283,570	88.3	40.9	27.0
White Mt.	1,037	3,446	3,446	3,334	2,753	0	387	2,513	100.0	96.7	72.9
Green Mt.	89	573	253	115	0	320	0	0	44.2	20.1	0
Allied	753	3,296	3,010	1,409	662	286	1,933	0	91.3	42.7	0
Total	1,929	7,315	6,709	4,858	3,415	606	2,320	2,513	91.7	66.4	34.3
Advised Park Areas	3,300	16,872	16,872	15,616	4,979	0	0	16,872	100.0	92.6	100.0
Total	4,187,532	12,162,144	10,762,506	4,994,026	812,270	1,419,638	5,607,704	3,302,955	88.3	41.0	27.1







Table 41 - STATUS OF BLISTER RUST CONTROL WORK IN PRESENT NET CONTROL AREA IN NORTHEASTERN REGION BY STATES AND DISTRICTS

(December 31, 1946)

State	District	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked			Acreage in Control Area				Percentage of Control Area					
					First Working	Second Working	Third Working	Now on Maintenance Basis	Still in Need of First Working	Now Requiring Examination To Determine Need For Rework	Detail Mapped	Worked Once	Worked Twice	Worked Three Times	On Main- tenance	First Work	Examina- tion For Rework
Maine	Bradbury	340,510	86,657	305,735	280,462	92,512	14,474	116,659	60,048	138,304	89.8	82.4	27.2	4.2	34.3	17.6	40.6
	Calderara	791,113	318,913	704,630	718,848	349,238	13,980	80,686	72,265	570,553	89.1	90.9	44.1	1.8	10.2	9.1	72.1
	Curtis & Pike	874,239	401,121	612,180	837,184	447,671	2,261	173,765	37,955	622,207	70.0	95.8	51.2	0.3	19.9	4.2	71.2
	Waterville (No leader at present)	468,086	151,509	466,621	364,408	138,100	19,032	72,266	103,678	247,108	99.7	77.9	29.5	4.1	15.4	22.1	52.8
New Hampshire	Totals For State	2,473,948	958,200	2,089,166	2,200,902	1,027,521	49,747	443,376	273,046	1,578,172	84.4	89.0	41.5	2.0	17.9	11.0	63.8
	Baker	553,626	265,399	189,999	528,259	167,769	5,489	15,421	25,367	357,112	34.3	95.4	30.3	1.0	2.8	4.6	64.5
	Boomer	348,754	130,821	348,754	345,956	123,842	6,457	55,596	2,798	179,665	100.0	99.2	35.5	1.9	15.9	0.8	51.5
	Codman	241,270	117,438	190,735	224,687	102,067	13,347	29,891	16,583	176,029	79.1	93.1	42.3	5.5	12.4	6.9	73.0
Vermont	King	786,344	387,491	310,661	743,718	245,897	19,250	97,169	42,626	569,281	39.5	94.6	31.3	2.4	12.4	5.4	72.4
	Newman	731,039	289,451	134,010	670,718	187,650	14,555	186,759	60,321	471,392	18.3	91.7	25.7	2.0	25.5	8.3	64.5
	Richardson	366,450	152,910	229,141	296,554	79,360	3,969	46,046	69,896	270,163	62.5	80.9	21.7	1.1	12.6	19.1	73.7
	Totals For State	3,027,483	1,343,510	1,403,300	2,809,892	906,585	63,067	430,882	217,591	2,023,642	46.4	92.8	29.9	2.1	14.2	7.2	66.8
Mass.	Mulholland	248,822	49,593	248,822	132,336	75,843	3,174	9,024	116,486	75,082	100.0	53.2	30.5	1.3	3.6	46.8	30.2
	Palmer	195,231	44,577	193,251	134,086	28,261	3,909	64,040	61,145	45,626	99.0	68.7	14.5	2.0	32.8	31.3	23.4
	Rose	294,531	64,550	269,913	204,942	75,064	9,202	29,300	89,589	36,676	91.6	69.6	25.5	3.1	9.9	30.4	12.5
	Totals For State	738,584	158,720	711,986	471,364	179,168	16,285	102,364	267,220	157,384	96.4	63.8	24.3	2.2	13.9	36.2	21.3
R. I.	Brockway	815,840	311,999	393,516	803,860	559,347	21,858	670,730	11,980	115,082	48.2	98.5	68.6	2.7	82.2	1.5	14.1
	Doore	438,489	131,045	329,629	435,257	349,442	97,666	251,078	3,232	40,333	75.2	99.3	80.0	22.3	57.3	0.7	9.2
	Wheeler	407,744	155,911	228,511	377,894	85,759	1,478	16,917	29,850	280,014	56.0	92.7	21.0	0.4	4.1	7.3	68.7
	Totals For State	1,662,073	598,955	951,656	1,617,011	994,548	121,002	938,725	45,062	435,429	57.3	97.3	59.8	7.3	56.5	2.7	26.2
Conn.	White	162,407	71,256	131,113	162,407	150,903	34,068	162,407	0	0	80.7	100.0	92.9	21.0	100.0	0	0
	Miller (Litchfield Co.)	145,459	27,030	145,459	145,459	130,210	68,811	143,040	0	2,419	100.0	100.0	89.5	47.3	98.3	0	1.7
	Remainder of State	329,043	57,628	329,043	329,043	181,717	52,456	329,043	0	0	100.0	100.0	55.2	15.9	100.0	0	0
	Totals For State	474,502	84,658	474,502	474,502	311,927	121,267	472,083	0	2,419	100.0	100.0	65.7	25.6	99.5	0	0.5
New York	Barber	416,340	136,641	396,294	341,086	221,766	110,725	64,676	75,254	145,834	95.2	81.9	53.3	26.6	15.5	18.1	35.0
	Charlton	165,108	46,119	151,009	150,113	86,726	24,998	27,879	14,995	49,758	91.5	90.9	52.5	15.1	16.9	9.1	30.1
	Harpp	563,497	254,294	546,817	563,497	424,511	125,441	151,679	0	182,774	97.0	100.0	75.3	22.3	26.9	0	32.4
	Hick	141,047	27,280	114,126	125,294	66,109	20,584	27,838	15,753	41,569	80.9	88.8	46.9	14.6	19.7	11.2	29.5
N. J.	Holcomb	236,437	61,636	181,937	223,791	143,636	44,904	35,933	12,646	61,959	76.9	94.7	60.7	19.0	15.2	5.3	26.2
	Muiry	259,772	59,706	258,750	225,001	108,622	18,366	28,856	34,771	139,125	99.6	86.6	41.8	7.1	11.1	13.4	53.6
	Sievers	440,236	108,038	205,656	362,553	58,046	4,330	203,916	77,683	114,723	46.7	82.4	13.2	1.0	46.3	17.6	26.1
	Woolschlager	234,054	65,241	80,264	225,738	105,318	26,299	39,765	8,316	98,109	34.3	96.4	45.0	11.2	17.0	3.6	41.9
Penna.	Sub-Totals For Present Districts	2,456,491	758,955	1,934,853	2,217,073	1,214,734	375,647	580,542	239,418	833,851	78.8	90.3	49.4	15.3	23.6	9.7	33.9
	Counties Outside Present Districts	416,850	69,938	10,908	187,791	64,186	0	41,109	229,059	144,578	2.6	45.1	15.4	0	2.9	54.9	34.7
	Totals For State	2,873,341	828,893	1,945,761	2,404,864	1,278,920	375,647	621,651	468,477	978,429	67.7	83.7	44.5	13.1	21.6	16.3	34.1
	" " "	16,742	3,771	0	16,742	1,417	0	16,742	0	0	0	100.0	8.5	0	100.0	0	0
All States	DeBerti	219,749	36,675	210,423	191,263	36,187	7,117	54,634	28,486	119,859	95.8	87.0	16.5	3.2	24.9	13.0	54.5
	Simmonds	147,288	29,020	141,733	127,705	17,484	1,520	34,062	19,583	54,365	96.2	86.7	11.9	1.0	23.1	13.3	36.9
	Counties Outside Present Districts	386,027	73,874	320,086	285,854	89,366	22,550	26,029	100,173	258,005	82.9	74.1	23.2	5.8	6.7	25.9	66.8
	Totals For State	753,064	139,569	672,242	604,822	143,037	31,187	114,725	148,242	432,229	89.3	80.3	19.0	4.1	15.2	19.7	57.4
All States	-	12,182,144	4,187,532	8,379,726	10,762,506	4,994,026	812,270	3,302,955	1,419,638	5,607,704	68.8	88.3	41.0	6.7	27.1	11.7	46.0







Table 42 - Nursery Sanitation Work During 1946 By States  
(All rework and conducted under Regular Cooperative Program)

State	No. Nurseries Worked	Est. No. White Pines in Nurseries Worked	Acreage Worked	No. Ribes Destroyed (all wild)	Total Man Days	No. Ribes Per Acre	No. Acres Worked Per Man Day
Mass.	1	3,100	60	91	9	1.5	6.7
Conn.	3	250,000	450	16	5	0.04	90.0
N. Y.	3	32,550,000	3,690	1,197	58	0.3	63.6
Penna.	2	190,700	569	3	2	0.01	284.8
All States	9	32,993,800	4,769	1,312	74	0.3	64.4



Table 43 - Nursery Sanitation Work, 1930-1946, Inclusive  
By States

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild & Cult.	Cult. Only		Ribes	Man Days
Maine	Initial	206	103,538	22	163	502.6	.79
	Rework	1,529	10,819	-	300	7.1	.20
	Total	1,735	114,357	22	463	65.9	.27
N. H.	All Rework	2,762	7,825	1	283	2.8	.10
Vt.	"	2,230	4,914	75	409	2.2	.18
Mass.	Initial	783	30,558	112	147	39.0	.19
	Rework	7,370	19,467	182	1,123	2.6	.15
	Total	8,153	50,025	294	1,270	6.1	.16
R. I.	Initial	1,780	725	565	167	0.4	.09
	Rework	18,156	4,970	184	277	0.3	.02
	Total	19,936	5,695	749	444	0.3	.02
Conn.	Initial	7,683	16,934	165	335	2.2	.04
	Rework	62,131	18,904	980	2,546	0.3	.04
	Total	69,814	35,838	1,145	2,881	0.5	.04
N. Y.	Initial	3,735	31,579	655	424	8.5	.11
	Rework	112,076	135,883	1,246	6,135	1.2	.05
	Total	115,811	167,462	1,901	6,559	1.4	.06
N. J.	Initial	795	2,114	114	109	2.7	.14
	Rework	1,050	765	-	19	0.7	.02
	Total	1,845	2,879	114	128	1.6	.07
Penn.	Initial	4,414	38,954	494	343½	8.8	.08
	Rework	29,543	54,074	73	4,137½	1.8	.14
	Total	33,957	93,028	567	4,481	2.7	.13
All States	Initial	19,396	224,402	2,127	1,688½	11.6	.09
	Rework	236,847	257,621	2,741	15,229½	1.1	.06
	Total	256,243	482,023	4,868	16,918	1.9	.07

No separate record was kept of the nursery sanitation work prior to 1930, the results of such activities being included with the regular ribes eradication work.



**Table 44 - Nursery Sanitation Work, 1930-1946, Inclusive**  
**By Programs**

Program	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild & Cult.	Cult. Only		Ribes	Man
Regular Cooperative	Initial	17,076	191,917	1,943	1,336½	11.2	.05
	Rework	162,805	184,600	2,511	8,041	1.1	.05
	Total	179,881	376,517	4,454	9,377½	2.1	.05
P.W.A.	Initial	415	25,600	3	147	61.7	.35
	Rework	15,422	14,381	96	1,356	0.9	.09
	Total	15,837	39,981	99	1,503	2.5	.09
C.C.C.	Initial	280	279	47	33	1.0	.12
	Rework	11,592	45,523	14	3,699	3.9	.38
	Total	11,872	45,802	61	3,732	3.9	.31
W.P.A. (F.A.)	Initial	590	72	45	9	0.1	.01
	Rework	29,908	11,662	119	1,742	0.4	.06
	Total	30,498	11,734	164	1,751	0.4	.06
W.P.A. (State)	All Rework	4,117	492	-	300	0.1	.07
S.C.S.	Initial	1,035	6,534	89	163	6.3	.16
	Rework	13,003	963	1	914	0.1	.01
	Total	14,038	7,497	90	254½	0.5	.02
All Programs	Initial	19,396	224,402	2,127	1,683½	11.6	.05
	Rework	236,847	257,621	2,741	15,229½	1.1	.06
	Total	256,243	482,023	4,868	16,918	1.9	.07

**Table 45 - Status of Nursery Sanitation Work - December 31, 1946**

State	Nurseries Where Protection Established and Being Maintained				Acreage of Control Areas	Number Nurseries Protected During 1946	No. Additional Nurseries Which Established Zones But Now Abandoned
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	409	-	5
N. H.	-	1	1	2	749	-	1
Vt.	-	1	-	1	333	-	-
Mass.	-	4	2	6	1,485	1	14
R. I.	-	-	-	-	-	-	6
Conn.	-	2	2	4	1,582	3	17
N. Y.	-	4	-	4	3,770	3	5
N. J.	-	1	-	1	600	-	1
Penna.	1	4	3	8	3,921	2	6
All States	1	18	9	28	12,849	9	55



Table 46 - List of Nurseries Maintaining Sanitation Zones in Northeastern States  
(December 31, 1946)

	<u>Acreage of Sanitation Zone</u>
<u>Maine</u>	
Western Maine Nursery - Fryeburg, Maine .....	247
State Nursery - Orono, Maine .....	162
	<u>409</u>
<u>New Hampshire</u>	
Keene Forestry Associates - Keene, N. H. ....	250
State Nursery - Boscawon, N. H. ....	499
	<u>749</u>
<u>Vermont</u>	
State Nursery - Essex Junction, Vt. ....	333
<u>Massachusetts</u>	
Department of Conservation Nursery - Amherst, Mass. ....	225
Department of Conservation Nursery - Bridgewater, Mass. ....	100
Department of Conservation Nursery - Clinton, Mass. ....	150
Department of Conservation Nursery - Irving, Mass. ....	50
Kelsey Highlands Nursery - Boxford, Mass. ....	900
Weston Nursery - Weston, Mass. ....	60
	<u>1,485</u>
<u>Connecticut</u>	
Northeastern Forestry Company - Cheshire, Conn. ....	537
State Nursery - Barkhamstead, Conn. ....	492
State Nursery - Tolland, Conn. ....	365
Great Pond Nursery - Simsbury, Conn. ....	188
	<u>1,582</u>
<u>New York</u>	
State Nursery - Saratoga Springs, N. Y. ....	2,310
State Nursery - Lowville, N. Y. ....	1,150
State Nursery - Lake Clear, N. Y. ....	80
N. Y. State College of Forestry Nursery - Syracuse, N. Y. ....	230
	<u>3,770</u>
<u>New Jersey</u>	
State Nursery - Washington Crossing, N. J. ....	600



Table 46- List of Nurseries Maintaining Sanitation Zones in Northeastern States (Continued)  
(December 31, 1946)

	Acres of <u>Sanitation Zones</u>
<u>Pennsylvania</u>	
Clearfield State Nursery - Clearfield, Penna. ....	370
Greenwood State Nursery - Petersburg, Penna. ....	411
Mt. Alto State Nursery - Mt. Alto, Penna. ....	366
Rockview State Nursery - Pleasant Gap, Penna. ....	354
S. C. S. Nursery - Mt. Eagle, Penna. ....	215
Andorra Nursery - Chester Hill, Penna. ....	1,065
Fairview Nursery - Fairview, Penna. ....	559
Doyle Nursery - Seven Stars, Penna. ....	581
	3,921
<u>All States</u>	
28 Nurseries .....	12,849



Table 47 - Special Ribes Nigrum Elimination Work, 1928-1946, Inclusive - By States

State	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Mass.	750,359	6,657	42,629*	432	43,061	7,347
R. I.	110,137	1,917	16,219	1,093	17,312	1,929
Conn.	318,344	32,695**	7,464	42,397	49,861	14,610
N. Y.	526,593	5,128	37,064	761	37,825	5,250
All States	1,705,433	46,397	103,376	44,683	148,059	29,136

\* Includes 556 bushes pulled in connection with special black currant elimination project around nurseries in 1925 and 1926.

\*\* The survey in Connecticut included all cultivated ribes. It is estimated that the number of black currant patches in that state did not exceed 1500.

Table 48 - Special Ribes Nigrum Elimination Work, 1928-1946, Inclusive - By Programs

Program	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Regular Cooperative	1,082,878	14,227	85,624	20,550	106,174	14,155
F.F.A.	6,157	39	7,486	-	7,486	375
F.F.A. (F.A.)	180,313	869	3,156	432	3,588	1,081
C.W.A.	195,750	5,404	-	-	-	1,850
S.B.A.	240,335	25,858	7,110	23,701	30,811	11,675
All Programs	1,705,433	46,397	103,376	44,683	148,059	29,136

C.W.A. project consisted of location work only.

Table 49 - Status of Special Ribes Nigrum Elimination Work - December 31, 1946

State	Years Work Performed	Total Number Townships in State	No. Townships Where Special Black Currant Elimination Work	
			Completed	Partially Completed
Mass.	1930-1940, Incl.	355	346*	-
R. I.	1929-1933 "	39	39	-
Conn.	1930-1935 "	169	169	-
N. Y.	1928-1940 "	996	236	39
All States	-	1,559	790	39

\*Nine additional townships on islands next to mainland will not be worked.

In the other states, Ribes nigrum have been eradicated in the worked portions of the control areas in conjunction with regular control activities. Very few black currants have been found in these states.



Table 50 - State Compensation Paid For Cultivated Ribes  
Destroyed During Period 1918-1946, Inclusive

State	Total No. Cult. Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimbursement	Average Amount Paid Per Bush
Maine	153,519	0	-	0	0	
N. H.	159,941	2,008	1.3	53	\$550.60	\$1.27
Vt.	18,158	1,646	9.1	133	792.91	482
Mass.	329,762	42,098	12.8	674	17,027.75	352
R. I.	41,777	1,410	3.4	58	509.79	362
Conn.	90,700	175	0.2	16	103.50	593
N. Y.	185,030	16,338	8.8	1,151	5,587.99	342
N. J.	1,842	0	-	0	0	
Penna.	56,403	517	0.9	71	167.75	324
All States	1,037,132	64,192	6.2	2,166	\$22,742.29	354

No federal money has been paid for ribes compensation.

As indicated in Table 50, no compensation has been paid for the 153,519 cultivated ribes destroyed in Maine during the period 1918-1946, inclusive.

Table 50 includes 295 cultivated bushes removed in connection with control activities at Acadia National Park, and 115 cultivated ribes destroyed on National Forest land projects. No compensation was paid for such bushes removed from the control areas on these federal land projects.

Blister Rust Canker Elimination Work During 1946

Blister rust canker elimination work during 1946 was restricted to a small project at Acadia National Park in Maine where two men were employed by the Park Service for 73 man days during the period October 30-December 31 cutting out infections from valuable scenic pines in the vicinity of Old Farm. A total of 227 pines were examined and 22 fatally infected trees cut down. In addition, 250 branch cankers and 34 stem lesions were removed from 85 other diseased pines, none of which were large trees.



Table 51 - Blister Rust Canker Elimination Work, 1932-1946, Inclusive  
By States and Programs

State	Program	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Total No. Cankers Removed	Total Man Days
Maine	Regular	97,980	8,291	12,891	21,726	886
	C.C.C.	58,261	2,957	8,879	29,745	2,177
	Total	156,241	11,248	21,770	51,471	3,063
N. H.	All W.P.A. (F.A.)	28,581	5,731	638	711	219
Vt.	Regular	24,647	1,597	1,765	3,116	189
	W.P.A. (F.A.)	226,489	38,342	18,838	21,253	2,491
	W.P.A. (State)	21,457	985	786	895	367
	Total	272,593	40,924	21,389	25,264	3,047
Mass.	W.P.A. (F.A.)	116,167	14,956	3,682	4,114	3,293
	C.W.A.	4,630,000	17,303	12,784	17,511	5,409
	Total	4,746,167	32,259	16,466	21,625	8,702
N. Y.	Regular	17,350	378	51	390	82
	W.P.A. (F.A.)	1,577,875	149,379	190,702	265,076	12,420
	W.P.A. (State)	324,770	8,868	7,571	8,257	1,519
	Total	1,919,995	158,625	198,324	263,723	14,021
Penns.	Regular	220	75	45	130	6
	C.C.C.	567,018	28,308	76,048	458,522	4,564
	W.P.A. (F.A.)	352,460	4,287	53,927	110,377	2,742
	Total	919,698	32,670	130,020	569,029	7,312
All States	Regular	140,197	10,341	14,752	25,362	1,163
	C.C.C.	625,279	31,265	84,927	488,267	6,741
	W.P.A. (F.A.)	2,301,572	212,695	267,787	391,531	21,165
	W.P.A. (State)	346,227	9,853	8,357	9,152	1,886
	C.W.A.	4,648,000	17,303	12,784	17,511	5,409
	Total	8,061,275	281,457	388,607	931,823	36,364

No special blister rust canker elimination work was performed in the region prior to 1932.

Table 52 - Blister Rust Canker Elimination Work, 1932-1946, Inclusive  
By Land Ownership Classes

Ownership Class	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	Number Infected Pines From Which Cankers Removed	Total Number Cankers Removed	Total Man Days
State and Private Lands	8,000,241	278,159	378,928	900,253	34,014
Grand National Park, Me.	61,034	3,298	9,673	31,570	2,350
Total	8,061,275	281,457	388,607	931,823	36,364



Table 53 - Total Expenditures For All Blister Rust Control Activities During Calendar Year 1946

State	Federal Funds					States and Local Cooperators						Grand Total
	B.E. & P.Q.		Forest Service	Park Service	Total	States		Indiv.	Towns	Counties	Total	
	3101	3103				Cash	Contributed Services					
Maine	18,818.18	49,758.13	-	1600.25	70,176.56	6,857.20	830.00	-	6,519.89	-	14,207.09	84,383.65
N. H.	24,495.76	53,928.54	-	-	78,424.30	5,295.10	2,244.49	-	18,154.13	-	25,693.72	104,118.02
Vt.	15,117.95	25,416.92	129.80	-	40,664.67	658.45	1,671.00	67.20	6,290.89	-	8,687.54	49,352.21
Mass.	16,827.55	17,814.82	-	-	34,642.37	5,226.77	1,208.16	3,799.35	41.00	-	10,275.28	44,917.65
R. I.	1,501.38	2,859.73	-	-	4,361.11	3,319.82	1,656.12	-	-	-	4,975.94	9,337.05
Conn.	5,176.22	9,879.18	-	-	15,055.40	5,512.80	2,650.00	229.60	408.80	-	8,801.20	23,856.60
N. Y.	29,384.77	133,206.25	-	-	162,591.02	83,362.90	12,563.94	518.56	-	15,366.66*	111,812.06	274,403.08
Penna.	13,688.37	26,453.18	1532.70	-	41,674.25	11,350.44	914.00	-	-	-	12,264.44	53,938.69
All States	125,010.18	319,316.75	1662.50	1600.25	447,589.68	121,583.48	23,737.71	4,614.71	31,414.71	15,366.66	196,717.27	644,306.95

\*Includes \$1,200. for contributed services.

Table 53 does not include following expenditures for Cambridge regional office during calendar year 1946:

Appropriation	Amount	
3101.14.....	\$41,063.75	
3103.14.....	4,999.04	(Salaries of Drs. Spaulding and Hansbrough)
3103.14.....	927.79	(Wages of temporary clerks - paid from Massachusetts (Ferry) L/A allotment)
Total.....	\$46,990.58	







**Table 54 - Total Expenditures For Blister Rust Control By All Cooperating Agencies  
in Northeastern States During Period 1918-1946, Inclusive**

State			Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	N.J.	Penna.	All States	
States and Local Cooperators	State		182,248.55	341,581.90	70,959.41	332,313.78	91,639.20	180,884.16	1,501,423.72	16,828.15	142,898.54	2,860,777.41	
	Individuals		85,354.48	49,031.17	75,132.74	105,992.44	581.36	10,218.59	175,348.69	-	2,273.36	503,932.83	
	Towns		162,208.20	468,072.61	42,999.67	24,266.24	-	29,743.06	9,422.78	-	-	736,712.56	
	Counties		-	1,724.08	-	-	-	-	98,373.18	-	-	100,097.26	
	Total		429,811.23	860,409.76	189,091.82	462,572.46	92,220.56	220,845.81	1,784,568.37	16,828.15	145,171.90	4,201,520.06	
Federal Funds	Regular	B.P.I.		249,874.54	434,415.50	119,398.94	323,393.88	43,883.83	103,065.16	479,769.34	6,271.28	31,619.21	1,791,601.68
		B.E. and P.Q.	3101	157,229.28	164,287.87	107,622.71	148,830.25	8,135.65	52,784.63	186,411.14	2,949.64	105,049.23	933,300.40
			3103	114,290.83	105,978.95	52,544.31	50,900.25	10,509.33	27,136.24	299,247.58	-	45,650.99	706,258.48
		Total		271,520.11	270,266.82	160,167.02	199,730.50	18,644.98	79,920.87	485,658.72	2,949.64	150,700.22	1,639,558.88
		Forest Service		284.46	3,416.54	129.80	-	-	-	-	-	2,542.47	6,373.27
		Park Service		21,195.76	-	-	-	-	-	-	-	5,598.08	26,793.84
		Sub-Total		542,874.87	708,098.86	279,695.76	523,034.38	62,528.81	182,986.03	965,428.06	9,220.92	190,459.98	3,464,321.67
	Emergency	C.C.C.		355,610.43	149,340.77	95,905.47	64,503.64	111,845.63	177,053.96	774,782.95	346.50	895,065.17	2,624,455.52
		P.W.A.		69,128.95	68,597.21	32,168.20	52,071.89	12,427.98	22,479.39	92,334.23	3,081.48	45,474.63	397,763.96
		W.P.A.-State Program		6,597.97	20,595.37	8,685.80	17,413.66	2,700.56	232,690.84	23,587.53	-	23,507.24	335,778.97
		W.P.A.-Federal "		649,730.76	632,428.87	402,140.28	407,457.56	48,258.65	83,153.99	1,132,151.77	7,303.37	455,814.65	3,818,439.90
		C.W.A.		-	-	-	31,134.08	-	5,938.10	-	-	-	37,072.18
		E.R.A.		1,426.80	-	-	10,998.20	-	94,478.40	2,779.70	-	-	109,683.10
		A.R.A.		-	-	-	-	1,640.00	1,152.71	8,010.58	-	4,254.65	15,057.94
		S.C.S.		-	-	-	-	5,797.19	-	9,087.87	230.25	9,313.27	24,728.58
		N.Y.A. & N.V.S.		-	-	-	-	-	-	812.40	-	220.80	1,033.20
		Sub-Total		1,082,494.91	870,962.22	538,899.75	583,579.03	182,670.01	616,947.39	2,043,547.03	10,961.60	1,433,951.41	7,364,013.35
	Total Federal Funds			1,625,369.78	1,579,061.08	818,595.51	1,106,613.41	245,198.82	799,933.42	3,008,975.09	20,182.52	1,624,411.39	10,828,341.02
	Grand Total			2,055,181.01	2,439,470.84	1,007,687.33	1,569,185.87	337,419.38	1,020,779.23	4,793,543.46	37,010.67	2,769,583.29	15,029,861.08
Percentage of Total			13.7	16.2	6.7	10.4	2.2	6.8	31.9	0.3	11.8	100.0	

Table 54 does not include any expenditures for the regional office. Such expenditures during the period July 1, 1935 to December 31, 1946 were as follows: B.E. and P.Q. funds - \$232,215.96; W.P.A. project funds - \$85,107.20; W.P.A. administrative funds - \$34,402.59; total - \$351,725.75. No record is available at Cambridge of Bureau of Plant Industry and P.W.A. expenditures for the regional office prior to July 1, 1935.







ANNUAL REPORT  
OF  
THE SECTION OF ENTOMOLOGICAL RUST  
IN THE  
SOUTHERN APPALACHIAN REGION  
FOR THE  
CALENDAR YEAR 1946

United States Department of Agriculture  
Agricultural Research Administration  
Bureau of Entomology and Plant Quarantine  
Southern Appalachian Regional Office  
Box 607  
Room 206, Federal Building  
Harrisonburg, Virginia  
March 1947







ANNUAL REPORT  
ON  
THE CONTROL OF WHITE PINE BLISTER RUST  
IN THE  
SOUTHERN APPALACHIAN REGION  
FOR THE  
CALENDAR YEAR 1946

United States Department of Agriculture  
Agricultural Research Administration  
Bureau of Entomology and Plant Quarantine  
Southern Appalachian Regional Office  
Box #507  
Room 208, Federal Building  
Harrisonburg, Virginia  
March 1947







# CONTENTS

	Pages
PART I - General Summary . . . . .	i - 8
PART II - Detailed Reports on Blister Rust Control on State and Private Land - 1946; Project BLR 3-2 . . . . .	9 - 70
Delaware . . . . .	10 - 18
Maryland . . . . .	19 - 22
North Carolina . . . . .	23 - 31
Virginia . . . . .	32 - 39
Georgia . . . . .	40 - 45
Kentucky . . . . .	46 - 51
South Carolina . . . . .	52 - 57
Tennessee . . . . .	58 - 62
West Virginia . . . . .	63 - 70
PART III - Detailed Reports on Blister Rust Control on National Forests, 1946 - Work Project BLR-4 . . . . .	71 - 116
George Washington National Forest . . . . .	72 - 81
Jefferson National Forest . . . . .	82 - 88
Hantahala National Forest . . . . .	89 - 92
Chattahoochee National Forest . . . . .	93 - 97
Cumberland National Forest . . . . .	98 - 103
Monongahela National Forest . . . . .	104 - 111
Sumter National Forest . . . . .	112 - 116
PART IV - Detailed Reports on Blister Rust Control on National Park Lands, Work Project BLR-5 . . . . .	117 - 131
Blue Ridge Parkway . . . . .	118 - 120
Great Smoky Mountains National Park . . . . .	121 - 125
Shenandoah National Park . . . . .	126 - 131







WHITE PINE BLISTER RUST CONTROL IN THE  
SOUTHERN APPALACHIAN REGION

ANNUAL REPORT - FOR 1946

PART I

By

J. Curtis Ball, Regional Leader







## FOREWORD

White Pine Blister Rust Control in the Southern Appalachian Region operated under four work projects during 1946. These were BLR 1-2, Leadership, Coordination and Technical Direction of the Program; BLR 3-2, Cooperative Blister Rust Control Operations on State and Private Lands; BLR 4, Blister Rust Control on National Forest Lands and BLR 5, Blister Rust Control on National Park Service Lands.

Except for work on Park Service lands, all work in the region was operated directly by the Bureau. The Park Service employed their own field supervisors and checkers and hired their own labor. Work project BLR 4 was handled on a reimbursement basis.

The following few pages summarize the highlights of the work during the year. Detailed reports on State and Private, Forest Service and Park Service projects are also included. The detailed reports will be issued as separates to our various State and Federal Cooperators.

## SUMMARY OF ACCOMPLISHMENTS DURING

### THE 1946 FIELD SEASON

With an increase of cooperative funds to carry on blister rust control work on State, private, federal, and private lands intermingled with federal lands all nine States in the region were active during the entire year or part of the year.

White pine surveys continued throughout the year with over 900,000 acres mapped. Although some of the survey work was initial coverage the larger amount of it was a resurvey of white pine lands initially covered eight to twelve years ago. The resurveys in practically all cases showed an increase in white pine acreage and pine stocking from fifty to over one-hundred per cent.

Ribes eradication was actively carried on in Maryland, Virginia, West Virginia and Tennessee with a smaller amount being done in Kentucky and North Carolina. No wild Ribes have as yet been found in South Carolina. A few weeks work was done in Delaware on cultivated Ribes eradication, scouting for the disease and locating white pine plantations.

All white pine surveys and second Ribes eradication were completed in Georgia and no work has been done in this State since February.

Because of the increase in white pine acreage our control area boundary has expanded in certain localities. This has brought about an increase in the initial acreage covered which is about twice that reported in 1945. However, the acreage being reworked is the largest and will continue to be so. Out of 35,182 Ribes-bearing acres worked in 1946, 32 per cent was initial, 61 per cent second working and 7 percent third working.

Of the nine National Forests in the region, Ribes eradication was performed on three and white pine surveys on six. Nearly half of the Ribes eradicated in the region were pulled by Forest Service crews on Forest Service and intermingled private lands, with about 89 per cent of the Ribes being pulled on the George Washington National Forest in Virginia and West Virginia. Ribes averaged over 50 bushes per acre with an expenditure of 0.39 man-days per acre.

On National Park Service lands wild Ribes were destroyed on 145 acres on the Shenandoah National Park in Virginia and 114 acres on the Great Smoky Mountains National Park in North Carolina. On the Blue Ridge Parkway only cultivated Ribes were destroyed. On Park Service lands Ribes pulled averaged over 78 per acre and man-days expended averaged 0.54 per acre.

On State and private lands more acreage was worked on Ribes-bearing lands but Ribes only averaged 22 per acre so the number of bushes pulled was about half that eradicated by Forest Service crews. One reason for this is that the initial work by the Forest Service was 13 per cent greater. Another reason was that Ribes regeneration is a good deal greater at the higher elevations which take in so much of our National Forest lands, hence 87 per cent of our third working was done by Forest Service crews.

Although a good deal of scouting was done, no long distance spread of the rust was observed, and only three new locations were reported having Ribes infection for the first time. There were two counties in eastern Maryland and one in Delaware. In all respects it can be safely said that the disease is now well checked throughout the region. Our biggest danger still lies along the higher mountain ranges where Ribes regeneration is more pronounced.

The labor situation throughout the region was rather erratic. In some sections little trouble was experienced in obtaining labor while in others it was nearly impossible to get. Where our operations centered near industrial areas labor was scarce while in the upland farm belt, labor was more plentiful. Also, our wage rates have not been in line with rates paid by industry, State agencies and other Federal agencies. The general minimum unskilled hourly wage rate is now near 65 cents. We are still paying a minimum rate of 52 cents per hour. Adjustments will have to be made if we are to operate effectually in the spring of 1947. Although many war veterans were hired it was difficult to get steady work



tied down to one job for long. This turnover in labor caused some loss of time in training new employees.

A number of changes in personnel occurred during the year. When operations were closed out in Georgia Assistant Area Leader W. V. Zimmer was transferred to Wytheville, Virginia to take over the duties of Mr. H. B. Teague who resigned to go into private employment. Field Supervisor, G. C. Hamilton of West Virginia, Fred W. Hall of Georgia and James R. Tomlinson of North Carolina resigned because of poor health or to go into other business. Three Field Foremen, Clarence Fultz of West Virginia, Gordon Simmons of Virginia and Martin Miller of Virginia were promoted to Field Supervisors, SP-5. In the Regional Office, Miss Audrey Jenkins was assigned to the permanent staff as Clerk Stenographer CAF-2

TABLE I

Summary of Work Performed in 1946.

Agency	Expenditures	Acres Ribes Free*	Acres Worked Ribes-Bearing			Ribes Destroyed	Man Days
			First	Second	Other		
Bureau & State	104,059.02	296,499	4,754	15,573	272	453,199	10,538
Forest Service	83,268.49	237,579	6,222	5,860	2,242	722,950	8,585
Park Service	7,271.64	14,598	158	43	58	20,343	287
Total Region	194,599.15	548,676	11,134	21,476	2,572	1,196,492	19,410

\* Acres found Ribes-free on survey and blocked out on post checks.

\*\* Includes man-days on Ribes eradication and on blocking out Ribes-free acreage. (7,132 on block-out and 12,108 on Ribes eradication).

TABLE II

Summary of Ribes Eradication By States and Operating Agencies - 1946

State	Operating Agency	Acres * Ribes-Free	Acres Worked (Ribes-Bearing Lands)				Ribes Destroyed	Time-Days
			Initial	Second	Other	Total		
Delaware	Bureau & State	1,504					2,776	1,000
Maryland	Bureau & State				97	97	2,820	1,000
Virginia	Bureau & State	64,217	3,687	817	175	4,679	200,427	1,000
	Forest Service	156,170	4,325	2,174	2,242	8,741	580,401	1,100
North Carolina	Park Service	220	44	43	58	145	11,232	30
	Bureau & State	106,938	130			130	3,817	15
	Forest Service	34,835						
West Virginia	Park Service	5,513	114			114	9,104	100
	Bureau & State	23,273	907	12,746		13,653	188,852	1,000
Kentucky	Forest Service	26,768	1,897	3,686		5,583	142,549	1,000
	Bureau	55,139	30			30	359	70
Tennessee	Forest Service	16,640						
	Bureau & State	1,000		2,010		2,010	54,110	1,000
South Carolina	Forest Service	8,865						
	Bureau	44,428						
Georgia	Forest Service	3,106						
	Bureau & State	296,499	4,754	15,573	272	20,599	453,199	5,500
TOTAL REGION	Forest Service	237,519	6,222	5,860	2,242	14,324	722,950	5,000
	Park Service	14,598	158	43	58	259	20,343	100
GRAND TOTAL		548,616	11,134	21,476	2,572	35,183	1,196,492	12,100

\* Includes acres blocked out by survey and post checks.



TABLE III

Summary of Ribes Eradication By Forest Service in 1946

National Forests	Acres Ribes Free	Acres Worked on Ribes-Bearing Lands				Man-Days			Ribes Eradicated		
		Initial Work	Second Working	Other Workings	Total	First Working	Re-Work	Total	First Working	Re-Work	Total
Coos-Washington	82,362	5,778	2,995	2,942	11,015	2,243	2,482	4,725	269,711	371,854	641,565
Jefferson	82,086	0	300		300	2	267	269	670	24,471	25,141
Monongahela	16,490	435	2,475		2,910	105	538	643	21,812	34,432	56,244
Northland	16,640										
SUB TOTAL U.S. REGION 47	199,578	6,222	5,860	2,242	14,324	2,350	3,287	5,637	292,193	430,757	722,950
Montana	34,834										
Chattahoochee	3,106										
SUB TOTAL U.S. REGION 48	37,941										
TOTAL NATIONAL FORESTS	237,519	6,222	5,860	2,242	14,324	2,350	3,287	5,637	292,193	430,757	722,950

\* Includes acres blocked out by survey and post checks.

TABLE IV

Summary of Ribes Eradication By National Park Service in 1946

National Parks	Acres Ribes Free	Acres Worked On Ribes-Bearing Lands				Man-Days			Ribes Eradicated		
		Initial Work	Second Working	Other Working	Total	First Working	Re-Work	Total	First Working	Re-Work	Total
Shenandoah	220	44	43	58	145	17	23	36	6,209	4,207	10,416
Blue Ridge Parkway	5,513								893		893
Great Smoky Mountains	8,865	114			114	105		106	9,104		9,209
TOTAL - NAT. PARKS	14,598	158	43	58	259	178	23	141	16,126	4,207	20,333

\* Includes acres blocked out by survey and post checks.



TABLE V

Acres Worked By Land Ownership in 1946

OWNERSHIP	ACRES WORKED					TOTAL (All Workings)
	Acres Ribes-Free	Initial Work		Second Working		
		Acres With Rib.	Acres With Ribes	Acres With Ribes	Other Workings	
Forest Service, Region #7	39,742	6,345	4,866	2,050	53,003	
Forest Service, Region #8	43,360	.	.		45,360	
SUB-TOTAL, Forest Service	83,102	6,345	4,866	2,050	96,363	
Park Service, Region #1	15,916	158	43	58	16,175	
SUB-TOTAL, Federal Lands	99,018	6,503	4,909	2,108	112,538	
State & Private Lands, Area #1	312,331	3,009	1,260	464	317,064	
State & Private Lands, Area #2	137,267	1,622	15,307		154,196	
SUB-TOTAL, State & Private Lands	449,598	4,631	16,567	464	471,230	
REGIONAL TOTALS	548,616	11,134	21,476	2,572	583,798	

\* Includes acres blocked out by survey and post checks.



TABLE VI

## Summary of Expenditures on Ribes Eradication in 1946

State	Bureau (Leadership & Coordination)	Bureau Cooperative Funds	State - Cooperative Funds (Direct Aid Only)*	National Forest Service	National Park Service	Total Funds Expended
Delaware	66.29	823.21	71.56			961.06
D Maryland	438.12	3,686.71	922.05			5,046.88
Virginia	24,953.32	16,669.22	6,046.92	55,651.11	2,071.78	108,372.35
S. Carolina	5,334.39	14,392.68	7,448.86	9,526.27	5,199.86	41,903.86
N. Virginia	14,571.01	28,652.28	6,574.56	16,652.35		66,449.10
Kentucky	1,071.47	4,264.35		1,171.05		6,506.87
Tennessee	1,565.03	8,822.58	922.00			11,309.61
S. Carolina	1,030.96	3,562.28		468.87		5,062.11
Georgia	2,666.54	1,085.22	114.57	1,818.94		5,685.27
TOTAL	51,697.73	81,958.50	22,100.52	85,268.49	7,271.64	248,196.86

\* Indirect aid on the part of the various States was valued at \$2,427.00, which brings this total amount expended (cash and contributed services) to \$24,572.52.

TABLE VII.

## Status of Ribes Eradication By States

State	Acres Control	A C R E S   W O R K E D			Acres On Main-tenance	Acres Remain- ing to Work
		Initial	Second	Other		
Delaware	6,186	6,186	-	-	6,186	-
Maryland	175,156	172,867	17,705	19,949	154,406	2,289
Virginia	1,356,448	1,285,900	62,562	19,164	1,151,486	70,548
N. Carolina	1,883,348	1,680,699	8,992	3,559	1,668,096	2,649
W. Virginia	865,478	843,669	108,538	-	647,195	21,809
Kentucky	152,156	122,156	65	-	122,156	30,000
Tennessee	1,631,257	1,631,257	17,567	-	1,601,788	-
S. Carolina	89,428	44,428*	-	-	44,428	45,000
Georgia	674,825	674,355	1,008	390	674,015	470
TOTAL	6,634,282	6,461,517	216,437	43,062	6,069,756	172,765

\* Control Area estimate increased for Kentucky and South Carolina.  
Final adjustments cannot be made until resurveys are completed.

TABLE VIII

## Status of Ribes Eradication By Land Ownership

Ownership	Acres Control	A C R E S   W O R K E D			Acres On Main-tenance	Acres Remain- ing to Work
		First	Second	Other		
Forest Service	1,550,546	1,502,564	60,277	14,036	1,412,127	47,982
Park Service	122,763	119,983	3,301	2,899	106,036	2,780
State & Private	4,960,973	4,838,970	152,859	26,127	4,551,543	122,003
TOTALS	6,634,282	6,461,517	216,437	43,062	6,069,756	172,765



PART II

Work Project BDR 3-2

Detailed Reports on Blister Rust Control on  
State and Private Land - 1946\*

By

Henry E. Yost, Area Leader, Area No. I

William V. Zimmer, Assistant Area Leader, Area No. I

Ralph W. Welch, Area Leader, Area No. II

- \* These reports include summaries of all control work by States and are to be issued as separate State Reports to the Cooperators.





WHITE PINE BLISTER BUST CONTROL  
IN THE  
STATE OF DELAWARE  
1946

WORK PROJECT - BLR 5-2

By

Harry E. Vost, Area Leader, Area No. 1  
Earle E. Nicholson, Agent





### INTRODUCTION

Blister rust control work does not constitute a difficult problem in the State of Delaware for wild currants and gooseberries are practically nonexistent. Only one such location of gooseberries has been reported; these were probably escaped cultivated bushes and have been removed. Cultivated bushes, however, are present in most communities. Blister rust control work in Delaware began about 1916 with periodic examination of white pine and Ribes by agents of the United States Department and the Delaware State Board of Agriculture. The finding of blister rust on black currants near Hockessin in 1937 made it desirable to augment the blister rust control work in the State. Therefore, a survey was begun in 1938 and completed in the summer of 1940. Except for a few weeks of work in the summers of 1941 and 1945, there has not been an intensive or an extensive check made since the original survey was completed. In cooperation with the Delaware State Board of Agriculture and the Bureau of Entomology and Plant Quarantine, a rechecking of the white pine plantations and many of the ornamentals was made in the State during the last half of June and the months of July and August, and the first three weeks in September 1946. In addition, all known Ribes sites in the State were examined for white pine blister rust. The Ribes sites south of the old control area line are those that were located near white pine so there may be others unknown to us. The blister rust was found for the first time in Sussex County this year.

A white pine blister rust display was exhibited as part of the State Board of Agriculture displays at the Fort-Sussex Counties Fair (equivalent of a State Fair). The exhibit was in a favorable location where everyone who entered the agriculture building could see it. Charts and riker mounts showing the symptoms of the disease on the host plants, and also the means of dissemination and control were used effectively. Many pamphlets (Publication 22) were distributed to those interested in the protection of white pine.

### TABLE I

Status of Control as of December 31, 1945

White Pine Acreage In Control Area	Control Acreage In The State	Control Acreage Initially Worked	Total Ribes Des- troyed	Total Man- Days Worked	Per Cent of Initial Work Completed	Acreage On Main- tenance
242	6,186	6,186	6,889	238	100	6,186

STATUS OF WHITE PINE

The white pine trees in Delaware are principally ornamentals. In recent years, however, there has been an increase in reforestation of marginal land with white pine. In general the trees examined during 1948 were healthy and making good growth. The most serious damage seen was from bagworm and chlorotic dwarf. In some areas aphids were very numerous on white pine. In the early and middle parts of the summer many trees displayed a browning or blighting of the needles, but this condition lessened considerably toward the end of the summer.

In five places white pine was observed to be seeding in from naturalized trees. Four of these locations are in the southern part of the State south of the control area line. The following table gives the location of these stands.

TABLE II

Quadrangle And County	Map Location No.	Location
Millsboro Sussex	21	Several miles west of Georgetown.
Rehoboth Sussex	1	About 6 miles west of Rehoboth Beach.
Harrington Sussex	4	About 3 miles west of Greenwood.
Harrington Kent	22	Several miles southwest of Harrington.
West Chester	7	Sunny Hill Schools
New Castle	8	Southeast of Hockessin

In the last four years the State Forest Nursery has shipped white pine seedlings for reforestation purposes totaling 55,375 trees. From observations made from time to time by various workers white pine is well adapted to the soil and climate in Delaware. The number of owners of small white pine plantations as well as the number of owners of ornamentals is increasing.

STATUS OF RIBES

Initial eradication work has been performed in most of the white pine growing sections of Delaware, and a large number of Ribes found have been destroyed. Of the total of 10,604 Ribes found, 6,889 or 65 per cent have been destroyed. Most of those not destroyed are too far from white pine to cause any serious damage. There has been some planting of currant



and gooseberry bushes. But the number has been more than offset by the number of bushes destroyed. While some owners wish to retain their bushes, most of them are willing to cooperate in protecting the white pine. A few owners insist on keeping their bushes even though they have white pine of considerable more value than the bushes. In 1946 two permits to plant Ribes were granted and four requests were rejected.

Effective July 10, 1946, under the provisions of the white pine blister rust quarantine, European black currants may not be moved interstate to any point in Delaware. Gooseberry and currant plants, other than European black currants, may not be moved interstate to any destination unless accompanied by control area permits secured from the Plant Pathologist, State Board of Agriculture, Newark, Delaware. In the provisions of the State quarantine, no gooseberry or currant plants may be planted north of the Chesapeake-Delaware Canal, which is the southern boundary of the control area. In other parts of the State a permit is required which may or may not be granted depending upon the proximity of the planting site to existing white pines.

#### RECOMMENDATIONS

Blister rust, although it has never been reported on white pine, has been found on Ribes in each county of the State. The rust appears in successive years at some of these locations. With the rust recurring on the Ribes there is a constant threat of damage to the valuable white pine plantings and ornamentals. Even though the number of Ribes is decreasing the danger is still present. With this in mind the following recommendations are submitted:

1. Continue to control the planting of Ribes in order to maintain a sufficient protective zone around the white pine.
2. Inspect annually the bushes where blister rust has been found and where white pine and Ribes are growing close to each other. This can be done in two or three days for these locations are concentrated in a few areas. Tabulated lists with this information are attached to this report.
3. Inspect white pine near infection centers in the spring when the cankers are more readily observed.
4. Encourage the planting of white pine for reforestation purposes.



PICTURE I

One of the White Pine Plantations on the Hoopes Reservation in New Castle County, Delaware. These trees were planted about 1935 and were grown in the State Forest Nursery. This photograph was taken in 1939.

Photo by H. E. Yost, 1939





FIGURE II

The same plantation as shown in Figure I as it is in 1946. Many trees in this plantation are now over 20 feet high and are growing at the rate of over  $2\frac{1}{2}$  feet per year. The plantation was protected from Blister Rust by the removal of the currants and gooseberries growing nearby.

Photo by E. A. Andrews, 1946

## PLACES WHERE RIBES ARE NEAR WHITE PINE

## AND WHICH SHOULD BE INSPECTED

Quadrangle & County	Imp No.		Remarks
	WP	Ribes	
Wilmington	87	123	Jones, BC next to WP.*
New Castle	86	124	Hodson & Allen, FC next to WP.*
	117	126	Dilsworth, RC near WP.* (Ribes 81?)
		128	A. Johanson, FC within 900' of WP.*
	127	90	Hamilton, RC near WP. GB next yard. (Ribes 136?) WP 128, 129.**
		134	Near WP 127, 129 and 88 **
		135	
		133	Maguire, RC near WP 113.**
		132	Getts, 25 BC near WP 90 and 88 **
	130	111	Johnson, BC next to WP
		103	Geeseman, WPBF 1945 and 1946
West Chester	33	71	Ortiz, GB near WP
..	121	92	RC near WP.
New Castle	124	24	Wood, RC near WP.
	84	41	RC near WP.
	126	95	Segl & Blacker, RC & GB near WP.
Charter New Castle		3	Swinnen, BC, IC, GB within mile of WP 81, 82 and 83.
New Castle		40	Herlong, RC near WP 74
		18	Bundrock, RC near WP 59
Elkton New Castle		20	Walton, FC near WP.

\* These four places are in "The Cedars"

\*\* These four places are in Cranstone Heights and Vicinity



## RESULTS OF THE LOCATIONS OF WHITE PINE DISTURBANCE IN DELAWARE

County	Community	Map Reference Location	Name Of Owner	No. & Species	Years Found
New Castle	Hockessin	84 WC*	Dr. Hemsath	4 EBC	1937, 38
New Castle	Cantonville	2 WC*	Mr. Spruane	17 RC, CG	1939
New Castle	Cantonville	87 WC*	Mrs. DuPont Dent	15 RC	1939
Kent	Chiswold	57 WY	Mrs. Schmidt	1000 RC	1939, 46
Kent	Harrington	None	Unknown	14 RC	1939
New Castle	Newark	20 E	Walton	1 FC	1943, 45
New Castle	Newark	21 E	Zietel	1 RC 1 G	1943 1945
New Castle	Ogelston	106 W	Baumgarten	30 RC	1945
New Castle		81 WC*	Webster	75 RC	1946
New Castle	Elmhurst	103W	McKensley	3 G 4 RC	1946
New Castle	Newark	22 E	Univ. of Del.	20 G 40 RC	1946
Kent	Wyoming	7 WY*	Wilkerson	4 G	1946
Kent	Harrington	17 H	Wharton	3 G	1946
Sussex	Redden Crossroad	31 M	Lonovan	6 G	1946

\* Removed.

Date		Description		Amount	
1911	Jan 1	Balance		100.00	
	Jan 5	John Doe		50.00	
	Jan 10	John Doe		25.00	
	Jan 15	John Doe		75.00	
	Jan 20	John Doe		100.00	
	Jan 25	John Doe		50.00	
	Jan 30	John Doe		25.00	
	Feb 1	John Doe		75.00	
	Feb 5	John Doe		100.00	
	Feb 10	John Doe		50.00	
	Feb 15	John Doe		25.00	
	Feb 20	John Doe		75.00	
	Feb 25	John Doe		100.00	
	Feb 30	John Doe		50.00	
	Mar 1	John Doe		25.00	
	Mar 5	John Doe		75.00	
	Mar 10	John Doe		100.00	
	Mar 15	John Doe		50.00	
	Mar 20	John Doe		25.00	
	Mar 25	John Doe		75.00	
	Mar 30	John Doe		100.00	
	Mar 31	John Doe		50.00	
	Apr 1	John Doe		25.00	
	Apr 5	John Doe		75.00	
	Apr 10	John Doe		100.00	
	Apr 15	John Doe		50.00	
	Apr 20	John Doe		25.00	
	Apr 25	John Doe		75.00	
	Apr 30	John Doe		100.00	
	Apr 31	John Doe		50.00	
	May 1	John Doe		25.00	
	May 5	John Doe		75.00	
	May 10	John Doe		100.00	
	May 15	John Doe		50.00	
	May 20	John Doe		25.00	
	May 25	John Doe		75.00	
	May 30	John Doe		100.00	
	May 31	John Doe		50.00	
	Jun 1	John Doe		25.00	
	Jun 5	John Doe		75.00	
	Jun 10	John Doe		100.00	
	Jun 15	John Doe		50.00	
	Jun 20	John Doe		25.00	
	Jun 25	John Doe		75.00	
	Jun 30	John Doe		100.00	
	Jun 31	John Doe		50.00	
	Jul 1	John Doe		25.00	
	Jul 5	John Doe		75.00	
	Jul 10	John Doe		100.00	
	Jul 15	John Doe		50.00	
	Jul 20	John Doe		25.00	
	Jul 25	John Doe		75.00	
	Jul 30	John Doe		100.00	
	Jul 31	John Doe		50.00	
	Aug 1	John Doe		25.00	
	Aug 5	John Doe		75.00	
	Aug 10	John Doe		100.00	
	Aug 15	John Doe		50.00	
	Aug 20	John Doe		25.00	
	Aug 25	John Doe		75.00	
	Aug 30	John Doe		100.00	
	Aug 31	John Doe		50.00	
	Sep 1	John Doe		25.00	
	Sep 5	John Doe		75.00	
	Sep 10	John Doe		100.00	
	Sep 15	John Doe		50.00	
	Sep 20	John Doe		25.00	
	Sep 25	John Doe		75.00	
	Sep 30	John Doe		100.00	
	Sep 31	John Doe		50.00	
	Oct 1	John Doe		25.00	
	Oct 5	John Doe		75.00	
	Oct 10	John Doe		100.00	
	Oct 15	John Doe		50.00	
	Oct 20	John Doe		25.00	
	Oct 25	John Doe		75.00	
	Oct 30	John Doe		100.00	
	Oct 31	John Doe		50.00	
	Nov 1	John Doe		25.00	
	Nov 5	John Doe		75.00	
	Nov 10	John Doe		100.00	
	Nov 15	John Doe		50.00	
	Nov 20	John Doe		25.00	
	Nov 25	John Doe		75.00	
	Nov 30	John Doe		100.00	
	Nov 31	John Doe		50.00	
	Dec 1	John Doe		25.00	
	Dec 5	John Doe		75.00	
	Dec 10	John Doe		100.00	
	Dec 15	John Doe		50.00	
	Dec 20	John Doe		25.00	
	Dec 25	John Doe		75.00	
	Dec 30	John Doe		100.00	
	Dec 31	John Doe		50.00	



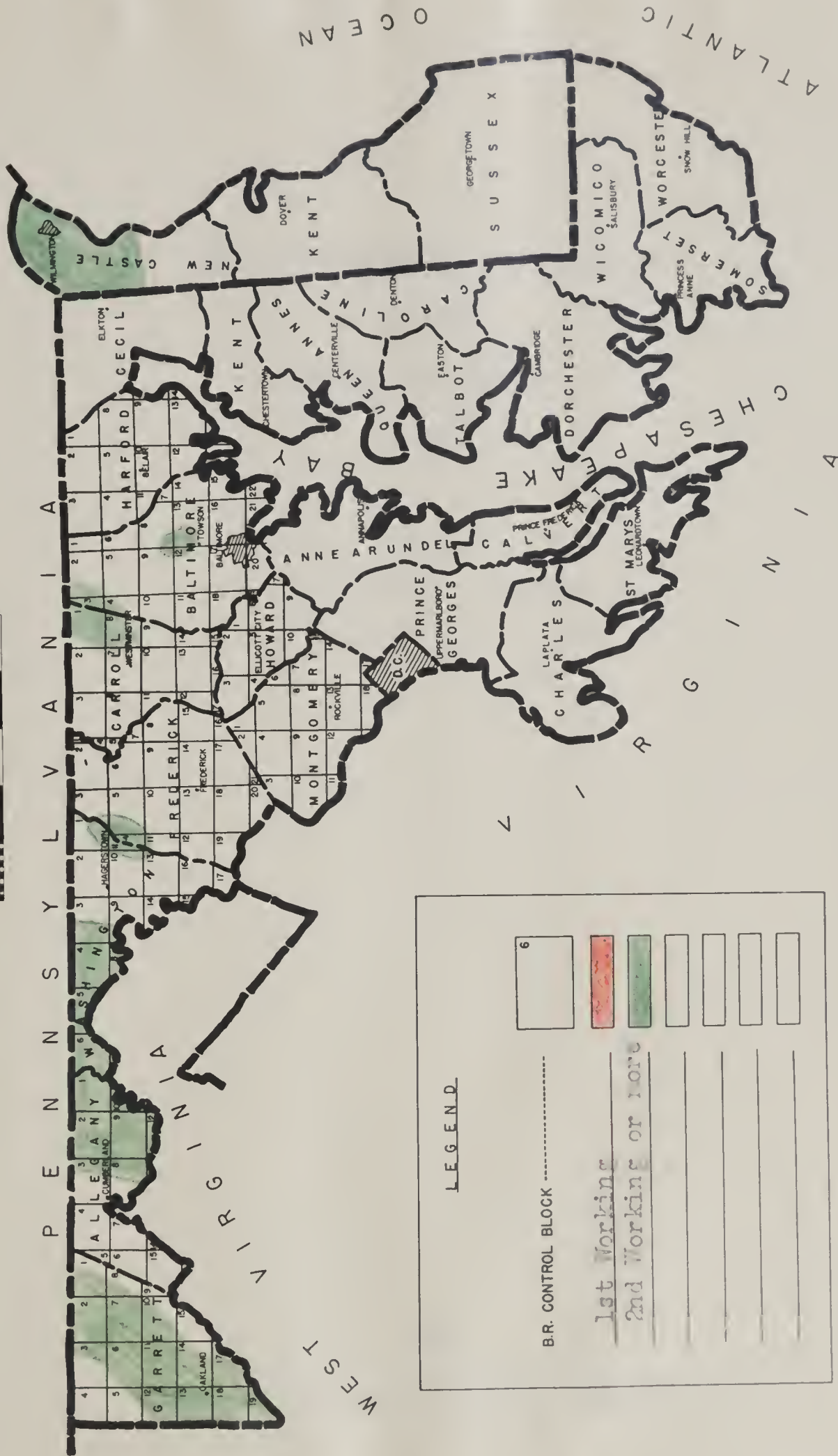
# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: PROGRESS  
(STATUS- PROGRESS- WORK PLAN, ETC)

DATE REPORTED: 12/31/46

STATE: MARYLAND & DELAWARE

SCALE IN MILES

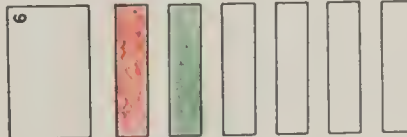


## LEGEND

B.R. CONTROL BLOCK -----

1st Working

2nd Working or more







WHITE PINE BLISTER BUST CONTROL

IN THE

STATE OF MARYLAND

1946

WORK PROJECT - BLR 3-2

By

Henry E. Yost, Area Leader, Area No. I





### SUMMARY OF WORK IN 1946

White pine blister rust control work in 1946 consisted almost entirely of post checking white pine areas in Garrett County which are owned, in whole or to a large extent, by the Department of Forests and Parks. The Department owns a total of 24 areas of white pine on which varying amounts of control work have been performed in previous years. Late in 1946 a study was made of the records on this pine and a field examination was made on some of the areas by the State Forester and the District Forester. Twenty of these were examined; the other four being discontinued on the basis of the present knowledge of the conditions. The remaining twenty were classified into five priority classes. The need for continuing control work was apparent but the lack of funds with which to do the work, both State and Federal, was recognized. It is likely that a large percentage of this pine will be dropped from the control area. Ribes eradication was performed on one area and a part of another one. This eradication work covered a total of 97 acres on which 2,870 Ribes were destroyed with an expenditure of 37 man days.

Examinations were made of the field study plots on which the development of the rust is being observed under control conditions. As expected, the rust is continuing to intensify and kill the white pine.

### STATUS OF CONTROL

The following table gives the status of control including all ownerships.

TABLE I

Status of Blister Rust Control - 1946 - Maryland

Acres White Pine In Control Area	Control Acreage	Control Area Initially Worked	Control Area Re- worked	Per Cent Initial Work Completed	Acres On Main- tenance
72,973	175,156	172,867	37,654	98	154,406

These figures reflect the situation of about 1941 when control work in this State was practically suspended. No complete examination has been made of any large part of the pine acres in the State since 1940 and 1941. During this six-year period undoubtedly the Ribes comeback has been heavy in many cases. In others the rust has probably infected a large percentage of the trees, perhaps so many that continued control work would be impractical. However, it is believed that the situation remains well under control, in all of the counties except Garrett. Findings on the State-owned areas this summer indicates that much of the white pine other than that owned by the Department of Forests and Parks is no longer worth protecting.

Climatic and other conditions in that part of the State west of Cumberland seemingly favor the relatively rapid growth and re-generation of wild Ribes. It has been well established from observations that these bushes come back quite regularly following such disturbances as lumbering, and in many cases fire. Due to the heavy timber cutting during the war and particularly mine prop operations, we can expect heavy Ribes comeback in many cases.

From 1933 until about 1941 the Federal government paid over 90 per cent of the cost of the blister rust control work. These funds were provided almost entirely through WPA and CCC programs. When these programs were discontinued the work was continued on a very limited scale on lands owned by the Department of Forests and Parks since they provided small appropriations which were matched by Federal funds. Since the State Horticulture Department has not provided any funds for this purpose no Federal appropriations could be made under the law for work on privately-owned lands, and consequently nothing has been done. Since the close of the war the State Department of Forests and Parks has slightly increased their appropriations, although funds set up for the current fiscal year are still very inadequate. The State Horticulture Department has not seen fit to make any appropriations. The State Plant Pathologist has, in so far as his other duties permit, done some scouting for the disease and other work such as quarantine, all during this period.

During the year rust was found in Talbot and Queen Anne's Counties on Ribes for the first time. This was found by a scout assigned to work in Delaware during the summer and who spent one day on the eastern shore. As of this date the rust has been found on Ribes, or pine, or both, in all of the counties west of the Chesapeake Bay except in Saint Mary's, Charles, and Howard. It has been found on the eastern shore in Cecil, Talbot, and Queen Anne's Counties. The rust on white pine in Garrett County is widely spread and in many cases doing extensive damage, and in Allegany, Washington, and Frederick Counties where it is well established but doing slight damage. It was found in one location in Montgomery County. It is quite evident that the rust has built up on pine sufficiently in the western counties, as well as in Pennsylvania, West Virginia and Virginia, to a point where any Ribes bushes anywhere in the State could become infected during an average year.



## WHITE PINE

White pine occurs naturally and seems to be well adapted over most of the State except in southern Maryland and on the eastern shore. Successful plantations have been established in practically every county. The rate of timber cutting where mature stands were found was greatly accelerated during the war and apparently has continued unchecked since the close of the war. Prior to the war many thousands of white pine seedlings were planted for reforestation purposes. This practically came to a stand still during the war and to date has not extensively been resumed, largely because of the scarcity and the high cost of labor.

## LABOR

Since the beginning of the war labor has been a serious problem not only in blister rust but most other types of work. In 1945 it was found impractical to do any blister rust work, even though funds were available, because of our inability to employ men at the wage rates which we were permitted to pay. During 1946 we were fortunate in securing the services of Mr. E. R. Porter, who has been employed on blister rust work seasonally since 1933. In addition we were able to secure two of our old foremen. The wage rates during the year were approximately double those paid during the depression years. Frequently persons who were drawing unemployment insurance in one form or another refused to consider our established wage rates.

## OTHER ACTIVITIES

Enforcement of Federal Quarantine 63 as well as the State Blister Rust Quarantine was continued during the year. Work is under way on rewriting the Extension Bulletin, No. 98, entitled "White Pine Blister Rust In Maryland," as was originally issued in June, 1943. A limited amount of scouting for the rust was carried on. This was almost entirely by the State Plant Pathologist as well as a man employed in Delaware, as previously mentioned.

## RECOMMENDATIONS

It must be clearly recognized by the State that if control work is to be continued funds must be provided. It is, therefore, recommended that both the State Horticulture Department and the Department of Forests and Parks carefully consider the blister rust problem. In the case of the Department of Forests and Parks the situation as of this date has been fairly well determined. In the case of the State Horticulture Department the first work would be a re-examination of the pine areas. This would require at least \$4,000, at least half of which should be provided by the State. If possible this work should be done in the spring of 1947.

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the success of any business and for the protection of the interests of all parties involved. The author argues that without accurate records, it is impossible to make informed decisions or to identify areas for improvement.

2. The second part of the paper focuses on the role of the accounting department in the overall management of the company. It highlights the fact that the accounting department is not just a support function, but a key player in the strategic decision-making process. The author suggests that the accounting department should be closely involved in all major business decisions, from capital budgeting to risk management.

3. The third part of the paper discusses the importance of transparency and communication in the accounting process. It argues that transparency is essential for building trust and for ensuring that all parties have access to the same information. The author suggests that the accounting department should be open and honest in its reporting, and should communicate clearly and effectively with all stakeholders.

4. The fourth part of the paper discusses the importance of continuous improvement in the accounting process. It argues that the accounting department should be constantly seeking ways to improve its efficiency and effectiveness. The author suggests that the accounting department should regularly review its processes and procedures, and should be open to adopting new technologies and techniques as they become available.



WHITE PINE BLISTER BEET CONTROL WORK  
IN THE  
STATE OF NORTH CAROLINA  
1946

WORK PROJECT - BLR 3-2

By

Henry E. Yost, Area Leader, Area No. 1  
Walter W. Stegall, Jr., Agent





SUMMARY OF 1946 WORK

Blister rust control work in North Carolina during the year consisted primarily of resurvey in those counties which were originally surveyed largely by the reconnaissance method several years ago. The resurvey was completed during the year in Macon, Alleghany, Surry, Avery, and Watauga Counties. At the end of the year Jackson County was more than three-fourths completed. A similar resurvey program was under way in the Great Smoky Mountains National Park and was confined mostly to the Tennessee side. The same is true of work on the Blue Ridge Parkway where resurvey was completed at Bluff Park and Cumberland Knob Park in Wilkes and Surry Counties, respectively. On the Nantahala National Forest similar work was carried on in Macon and Jackson Counties. The following table gives a resume of the resurvey work carried on during the year:

TABLE I

Summary of Resurvey Work - 1946

Agency	Acres White Pine Mapped	Control Acres Mapped	Approximate Per Cent Resurvey Complete
Bureau & State	50,840	107,478	30
Nantahala National Forest	24,925	36,516	60
Blue Ridge Parkway	2,032	5,513	40
Great Smoky Mts. National Park	5,700	8,865	20
TOTAL	83,497	158,372	30

Ribes eradication work was carried on by a Cooperative project and the Great Smoky Mountains National Park. The following table gives a resume of this work:

## TABLE IV

## Summary of Ribes Eradication - 1946

Agency	First Working*				Man-Days
	Ribes Free	Ribes Bearing	Total	Ribes Destroyed	
Bureau & State	-	130	130	3,817	54
Great Smoky Mts. National Park	-	114	114	9,104	105
TOTAL	-	244	244	12,921	159

\* Post checks and resurveys covered 147,286 previously worked acres on which no rework was found necessary.

Ribes eradication work by the Bureau was on a small pine area in Ashe County, that by the Great Smoky Mountains National Park was on the North Carolina side in the vicinity of Mount Sterling. In addition to the above eradication, wild Ribes were found at several locations where eradication, at present at least, was not considered justified. In the Great Smoky Mountains National Park, Mr. Roy C. Whaley, checker, reported wild Ribes and scattered white pines growing along the State line in Russell Field. This is the farthest south wild Ribes have been reported on the Park. They are Ribes cynosbati and were growing at an elevation of about 2,300 feet. Wild Ribes were also reported for the first time in the northwest corner of Macon County along the Watahala River, near Tipton at about 2,000 feet elevation. Another location was reported in the southeast corner of Jackson County. The area covered from one to two acres and consisted of a heavy concentration of Ribes cynosbati. These were found along the White Water River about one mile northward of the South Carolina line at an elevation of about 2,500 feet.

It is known that wild Ribes occur generally at the highest elevations in the western and southwestern ends of the State. These locations reported at low elevations usually consist of somewhat small and isolated patches of Ribes.

No new locations of blister rust were found during the year on either white pine or Ribes. The results of scouting in North Carolina, as well as nearby states, indicates that 1946 was an unfavorable year for the spread of the disease. A detailed study was made of white pine infection reported last year in Ashe County. The area was examined by representatives of the Bureau of Entomology and Plant Quarantine, and the Bureau of Plant Industry. It was decided to make a detailed study and to keep the area under observation for a long period of time. The plot was



established by the work of our Division under the direction of Dr. G. H. Hepting, Pathologist, of the Bureau of Plant Industry. In general, the rust appeared to have developed much the same as previous studies in other sections of the country. A detailed examination was made of all the white pine trees found on one acre. Data was taken on the white pine seedlings located on this acre and also on a surrounding zone of approximately one chain (66 feet) in width. No pine or Ribes were destroyed. The plot was fenced and it is intended to keep the area under observation to study the developments of the disease without any control measures applied. The results of this study were made available in Technical Memorandum No. 18, copies of which have been circulated to interested individuals and which are available upon request. A summary of this paper is set forth below:

The infection of white pine and Ribes by blister rust in Ashe County, North Carolina, representing the most southerly infection on pine, is described. An area of about 2.5 acres is involved and an intensive study is being made of the rust on a sample area on this tract. The earliest infections on the pines date back to about 1935. Additional cankers have appeared every year since, and in 1946 a total of 414 cankers were tallied on the 151 trees on the one-acre plot. To date the actual mortality has been slight, partly because the stand had attained considerable height at the time the infection occurred, and also because of the relative scarcity of Ribes. The development of the rust on this area appears to be comparable to that found in studies made farther north, and thus we can probably expect that the rust will be equally damaging in the far southern Appalachians wherever the pine-Ribes association is suitable, as it has been farther north. The Ashe County plot will be reexamined periodically to obtain more data on ultimate damage from blister rust.

This area was visited by a number of individuals for the purpose of studying the disease and familiarizing themselves with it. Persons who visited it were representatives of the U. S. Forest Service, U. S. Park Service, Tennessee Valley Authority, North Carolina Forest Service, Champion Fiber Company, and local land owners.

The over-all status of the work for the State remains much the same as last year and it is set forth in the following tables:

TABLE III

Status of Work as of December 31, 1946

W. P. Acreage In Con- trol Area	Control Acreage In State	Control Acreage Initially Worked	Control Acreage Re- Worked	Total Ribes Des- troyed	Total Man- Days	Per Cent Initial Work Completed	Acreas On Main- tenance
715,381	1,683,348	1,680,699	12,551	2,747,506	57,082	100	1,668,096

The status of the resurvey is briefly described as follows: Resurvey is completed in the following counties: Ashe, Alleghany, Surry, Watauga, Avery, and Macon. A substantial amount of work has been accomplished in Jackson, Mitchell, Yancey, and Haywood Counties. During 1947 it is hoped to complete the resurvey in Jackson, Clay, Cherokee, Graham, Swain, Mitchell, and Yancey Counties. If these plans can be carried out we will have by the end of the next year resurvey completed in thirteen of the twenty-five counties in the control area.

COOPERATION

During the year we have received excellent cooperation from all parties concerned. Particular mention should be made of Mr. Kerr Scott, Commissioner of Agriculture for North Carolina, Mr. C. H. Brannon, State Entomologist and Mr. W. Riley Palmer, County Agent in Buncombe County, who made available portions of his office for our use. Mention should also be made of Dr. Hepting, for his assistance and valuable suggestions in making the study of the blister rust infection and also Mr. R. L. Ballew, of Creston, on whose land this plot is located. In addition, very good cooperation was received from the State and Federal Forest Service personnel, as well as the National Park Service, Soil Conservation Service, and the State Extension Service.

PERSONNEL

Mr. Walter A. Stegall, Jr. was appointed Field Supervisor, effective January 2, 1946, temporarily located at Wytheville, Virginia. On January 14, he established an office in Room 309 $\frac{1}{2}$ , County Court House, Asheville, North Carolina and took over active direction of the blister rust work in Macon County. Mr. H. B. Teague continued to direct field work in Ashe, Avery, and Watauga Counties until his resignation at the end of February, at which time the supervision of this end of the State was turned over to Mr. Stegall. As soon as Mr. William V. Zimmer was transferred from Georgia and became established in Wytheville, Virginia as the new Assistant Area Leader, he rendered invaluable assistance in helping Field Supervisor Stegall look after the work in the northern counties throughout the rest of the year. Immediately in charge of the field crews during the



work in Ashe, Avery, Watauga, Alleghany, Blount Park in Wilkes, and most of Surry County, was Mr. J. R. Tomlinson, Field Supervisor, of Forestwood, North Carolina, who resigned effective October 4. His duties were then taken over by Foreman Everett E. Shepherd of Laurel Springs, North Carolina. Immediately in charge of work throughout the year in Macon and Jackson Counties was Foreman Claude W. Lelford, of Prentice, North Carolina. On October 14, Mr. Osborne R. Baxter, Field Supervisor of Newport, Tennessee assumed his duties assisting Supervisor Stogall in the Asheville office and supervising control survey work in Jackson County. Mr. Baxter was previously a Foreman of Blister Rust Control in Tennessee.

### WHITE PINE

Detailed information is not available at this time regarding the white pine cut in 1946. The data, however, for the first five months of the year indicates that the cut was about the same or perhaps larger than 1945. During the 1945 reports indicated over 62,500,000 board feet of white pine lumber cut. North Carolina has for several years produced more white pine than any other one State in the southeast and is usually among the first ten States in the Nation in this respect. No data is available regarding the white pine planting at this time but this program still remains far behind the pre-war period. The Soil Conservation Service, T.V. A., State and Federal organizations are all interested in the planting of the pine and no doubt will push this program vigorously during 1947.

### COSTS

The expenditures during the year were much greater than in 1945. This is due largely to the fact that very little work was carried on during the last half of 1945, therefore, a large part of the funds appropriated for the fiscal year ending in June 1946 were spent during the first half of the calendar year. Also, considerably more than half of the funds appropriated for the fiscal year ending June 30, 1947 were spent during the last half of the calendar year. Costs and expenditures as compared to the work accomplished, although higher than previous years, those in North Carolina compare very favorably with other States. The following table gives a summary of the expenditures.

Summary of Expenditures in 1946

Operating Agency	Amount Expended	Balance of Funds Available to June 30, 1947
Bureau Ent. & Plant Quar. (3/12/46) (State & Private)	10,592.88	\$ 4,937.85
State	7,408.86	1,907.90
<b>TOTAL COOPERATIVE</b>	<b>21,341.54</b>	<b>6,845.75</b>
Wentworth	9,526.27	1,224.02
National Forest Blue Ridge Parkway	1,012.51	1,150.00 (1)
Great Smoky Mountains National Park	4,187.35	4,139.00 (2)
<b>GRAND TOTAL</b>	<b>\$36,567.67</b>	<b>\$15,153.77</b>

(1) For work in North Carolina and Virginia.

(2) For work in North Carolina and Tennessee.

RECOMMENDATIONS

1. The resurvey should be continued as rapidly as possible with the hopes of completing it sometime in 1948 or earlier if possible.
2. Due to the presence of the rust in the State, considerable time should be spent each fall in scouting for the disease on Ribes as well as pine.
3. Close cooperation should be established with the Soil Conservation Service, U.S.A., State and Federal Forest Service, and others interested in the planting of white pine. We should prepare as soon as practicable a general discussion of the wild Ribes distribution in the State and make this information available to interested parties. We should definitely discourage the planting of white pine in areas where the wild Ribes are so numerous that the cost of protecting them would be excessive. In like manner, we should encourage the planting of white pine in favorable locations.



Labor and operating costs increased sharply during the year which had direct bearing on the effective amount of work accomplished. Since most of our resurvey work is on privately owned lands it will be necessary to maintain the present cooperative direct aid for the State for several more years. An increase in cooperative funds would hasten the completion of all resurvey work in the State which is desirable from the standpoint of bringing the status of control work up to date as soon as possible.

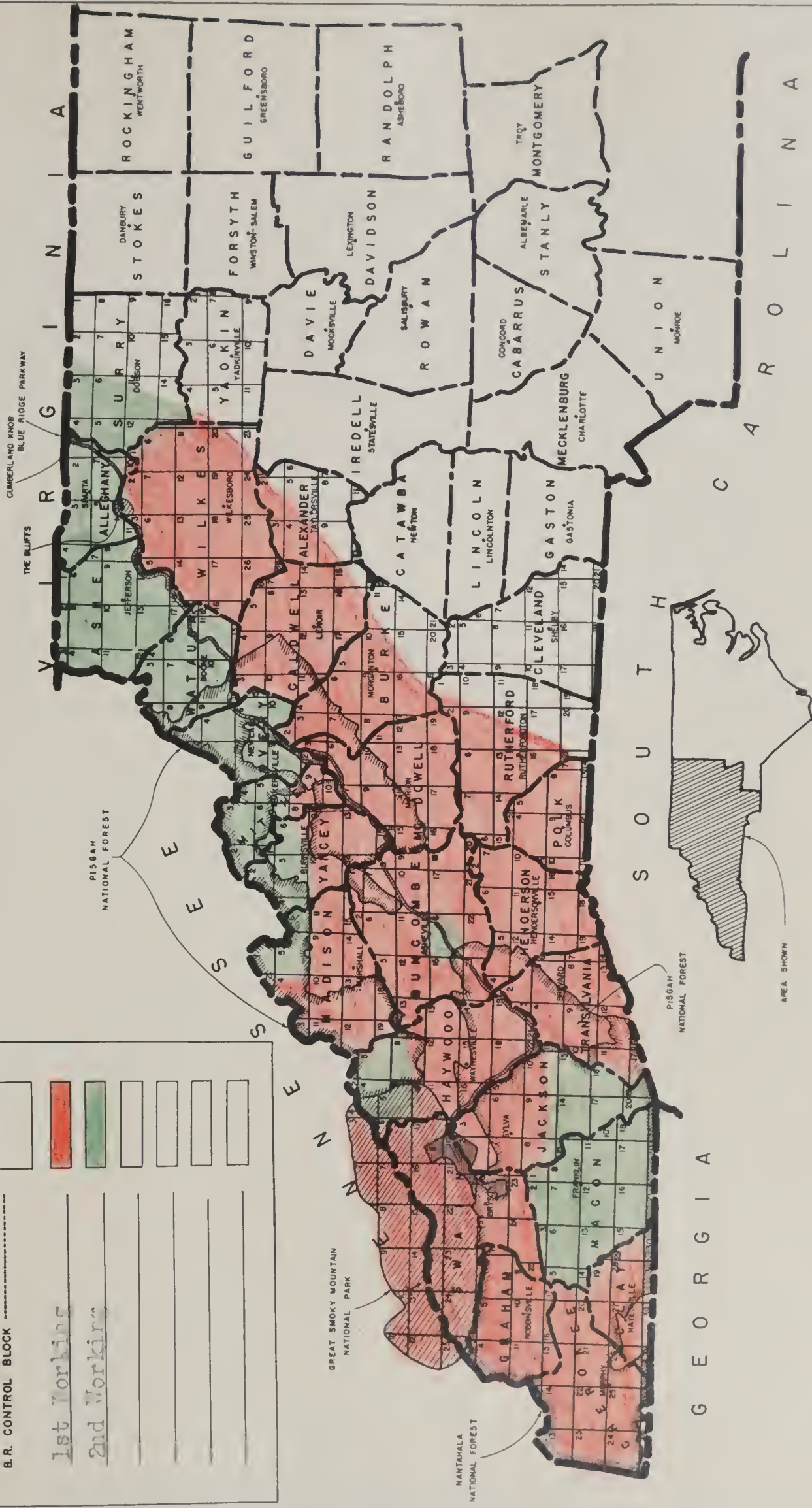
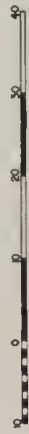
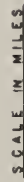




## Page 51

MAP DESIGNATES: Progress  
(STATUS-PROGRESS- WORK PLAN, ETC)

• • •







WHITE PINE SLISTER RUST CONTROL WORK

IN THE

STATE OF VIRGINIA

1946

WORK PROJECT - DLR 3-2

By

Henry B. Yost, Area Leader, Area No. I

William V. Zimmer, Asst. Area Leader, Area No. I







Along with the survey and certification work over 18,000 acres of land were checked. The regular checking represents the work done following the crews. In the fall of 1945 several large areas were worked late in the season and no effective check could be made due to the defoliation of the bushes. These areas were checked in the early spring of 1946 which explains the larger acreage covered on regular checking than was worked during the year. Advanced checks in conjunction with surveys were made during the dormant season in which we had reason to expect the presence of Ribes even though they were not reported on the maps. Post checking represents the reexamination of areas which were worked some years previous to determine the Ribes come-back. The following table gives a resume' of the checking:

TABLE II

## Summary of the Checking Work During 1946

Type of Check	Acres Covered	Approximate Per Cent Coverage	Man-Days
Regular	13,587	5	253
Advance	1,950	5	26
Post	1,162	4.9	15
TOTAL	16,699	5	294

STATUS OF CONTROL

The following table shows the status of control work as of December 31, 1946.

TABLE III

## Status of Control Work as of December 31, 1946

Wiles Plant Acreage in Control Area	Control Acreage In Two State	Control Acreage Initially Worked	Control Acreage Re-worked	Total Ribes Destroyed	Total Man-Days Used	Per Cent of Initial Work Completed	Acres On Maintenance
503,157	1,553,448	1,285,500	81,726	1,369,507	108,490	95	1,151,486



As of the close of the year when compared with last year, the records show an increase of about 30,000 acres of white pine and over 200,000 acres in the control area. It is difficult to predict what the final figures will be upon the completion of the survey because of a wide variation in different counties. In several counties the survey showed less white pine than the original estimate while in other cases, particularly Grayson, Augusta, and Rockingham Counties, a considerable increase was found.

The status of the survey is indicated in the following items:

1. Number of counties in the control area - - - - - 33
2. Number of counties in which survey is completed - - - - - 8  
(Washington, Smyth, Grayson, Wythe, Rockingham, and Augusta)
3. Number of counties in which the survey is over half completed - 3  
(Bland, Bath, Giles, Pulaski, and Shenandoah)
4. Number of counties that will probably be completed by  
the end of 1947. - - - - - 15  
(All of the above, and in addition, Frederick & Warren)

It should be remembered with reference to item 4 above that it is difficult to predict what county will be completed due to many variable factors, particularly the fact that frequently much more or less pine is found than is anticipated.

The status of the blister rust is much the same as described in last year's annual report. The rust has been found on one or both host plants in all of the 33 counties in the control area except Carroll, Floyd, Franklin, and Henry Counties. No new centers of infection were found during the year. Rather intensive scouting was carried on during the fall of 1946 but no large amount of rust was found except in the immediate vicinity of infected white pines. In general, the weather conditions during the year appeared to be below average for the spread of the disease.

### WHITE PINE

The situation with respect to white pine is much the same as last year except as shown in Table III. Lumbering data is only available for the first five months of the year. This period when compared with last year indicated an increase in the amount of white pine lumber cut. This would indicate that perhaps somewhere around 40,000,000 board feet of lumber were produced during the year. No information is available regarding the white pine planting, but in all probability it is still far below the pre-war average due to the scarcity and high cost of labor for planting trees. Extensive lumbering operations, of course, are under way throughout the State and some increase is noted in the amount of white pine being used for pulpwood.

# TABLE IV

During the year the labor situation improved considerably as compared with 1945, although the situation is far from ideal from an employer's point of view. In most counties we were able to secure all of the labor needed although the quality was at times disappointing. Throughout most of the year several cases were encountered where individuals evidently preferred to remain on unemployment compensation at \$20 per week rather than work for \$5 per hour. The following table shows the number of persons employed by operating agencies during the year. The peak of employment was reached first during the midsummer eradication season.

TABLE IV

## Peak Employment By Operating Agencies

Operating Agency	Number of Persons
Bureau	16
Forest Service	117
Park Service	4
TOTAL	197

During the year one additional supervisor was appointed. Mr. Henry G. Simmons, of Monterey, who had worked for several years as Foreman and seasonal supervisor, was appointed to assist Mr. Cramer on the George Washington National Forest. Mr. Charles A. Rodamer, who at the beginning of the year was stationed at Hot Springs, was partially incapacitated due to a blood clot developing after a major operation early in the year. Mr. Rodamer was transferred to the Regional Office where he is giving important aid in drafting and bringing many of our maps up to date. It is hoped that he will be able to return to the field during the next season. Mr. Martin Q. Miller completed the resurvey in Augusta County and late in the year started work in Frederick County. Mr. H. B. Teague, who had been State Leader in North Carolina for several years and later Assistant Area Leader stationed at Wytheville, Virginia, resigned early in the year. He was replaced by Mr. William V. Zimmer, who had served in similar capacities in Georgia and in Area No. II.





Increased. No new equipment was obtained during the year although a few good trucks were secured through the War Assets Administration.

#### FUTURE WORK

White pine is a valuable asset to the State of Virginia and will become more so as the people realize the potential value of the thousands of acres of reproduction which is showing up on our surveys. A lot of work has been done in the past in controlling the blister rust and there is still a lot to do. To complete all of the initial and rework in the State will require several more years of intensive work. In order to complete this program as soon as possible and place the work on a maintenance basis, we should have at least \$20,000 a year for the next two or three years. Of this amount the State would provide half to be matched by the Federal Government.



# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Progress  
(STATUS-PROGRESS-WORK PLAN, ETC)

STATE: VIRGINIA

DATE REPORTED: 12/31/46

SCALE IN MILES



## LEGEND

NATIONAL FORESTS

BLUE RIDGE PARKWAY

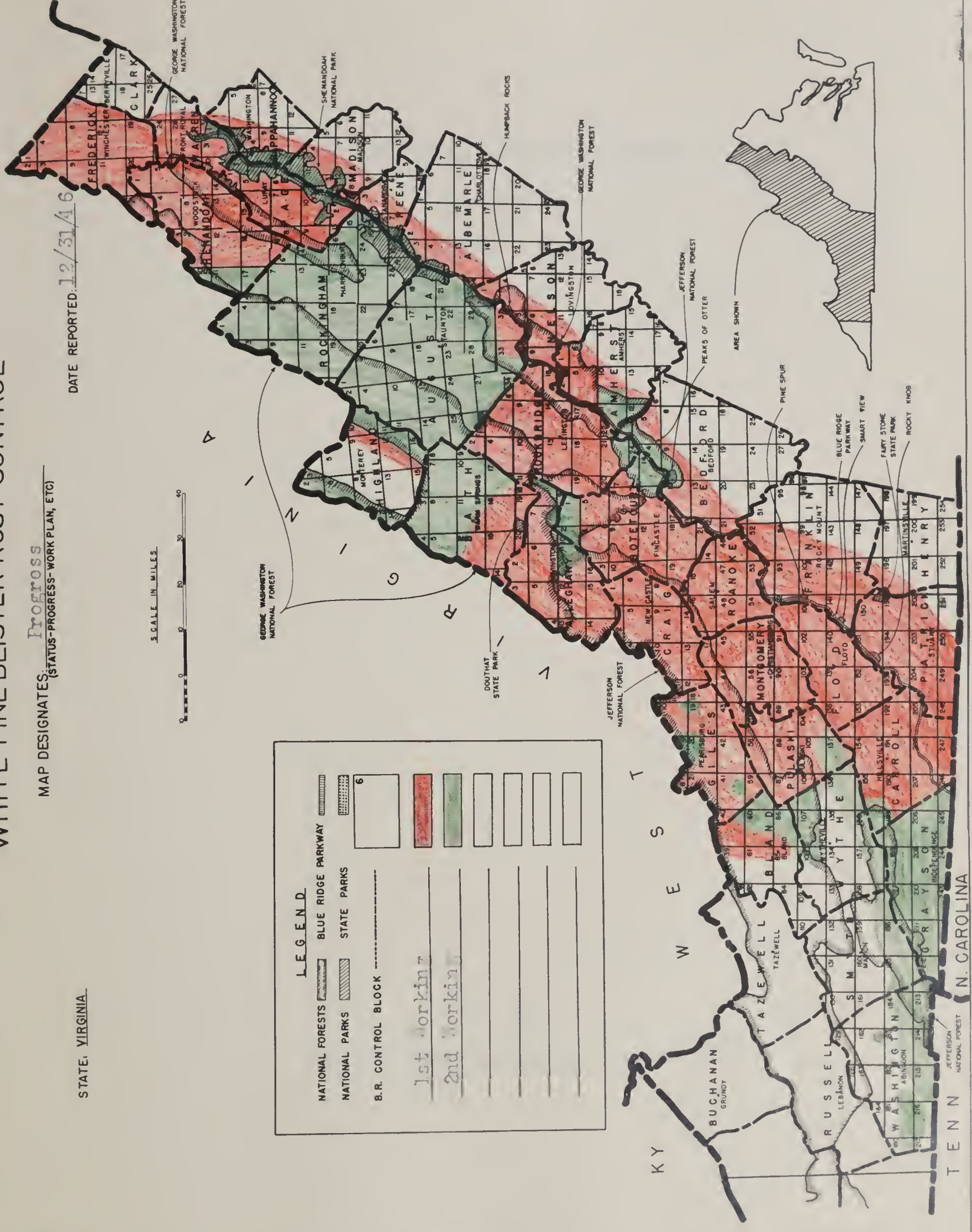
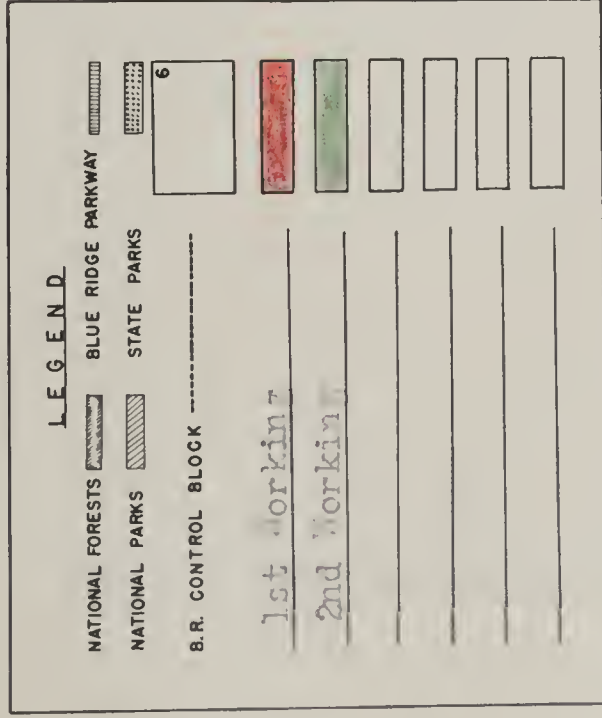
NATIONAL PARKS

STATE PARKS

B.R. CONTROL BLOCK

1st Working

2nd Working







WHITE PINE DISTRICT POST CONTROL

IN THE

STATE OF GEORGIA

1946

WORK PROJECT - BLR 3-2

By

Ralph W. Welch, Area Leader, Area II







from various attacks from the blister rust disease due (1) to the complete absence of Ribes plants over much of the control area and (2) to the effectiveness of eradication measures practiced within areas where pine and Ribes were found growing in association with each other.

In the future, occasional examinations and small local eradication projects in certain sections should suffice to maintain adequate control over blister rust, even though the spread of the disease may eventually reach this far south. (To date, blister rust infection has not been reported within the State of Georgia). At some time in the future a representative check might be made to determine the status of cultivated Ribes within the control area, since cultivated species were destroyed at many house sites in the original working of the State. This check, however, can safely be delayed for a number of years, possibly until such a time as the disease actually makes its appearance in the State.

In view of the fact that definite figures are available now that the program has been completed in this State, a table has been included as a part of this report showing a breakdown by county and ownership.

#### COOPERATION

It has only been through the medium of close cooperation between the U. S. Bureau of Entomology and Plant Quarantine, the U. S. Forest Service and the Georgia Department of Entomology that the blister rust control program has been brought to what is believed to be a successful conclusion after twelve years of almost continuous operation. In the early days of the program, our control operations met with many difficulties occasioned by continual shifts from and between various relief agencies, whose rolls in many cases would not permit the hiring of anything other than strictly unskilled labor, and whose regulations made the acquisition of suitable transporting equipment difficult at times. However, all obstacles were surmounted in one way or another, and after all much credit is due W.P.A. and other relief agencies in as much as the program would in all probability be incomplete at this date without benefit of the various relief funds. Throughout the years, we were actively supported by the Georgia Department of Agriculture who rendered valuable services as well as contributed considerable funds to further the program. In later years, operation of blister rust control in Georgia might have been seriously curtailed if not suspended had it not been for the splendid cooperation extended by the U. S. Forest Service. In addition to the active support of the several Federal and State agencies, credit is also due to the many individuals in Georgia who supported the program and contributed toward its completion.

#### RECOMMENDATIONS FOR FUTURE WORK

A few Ribes areas in Murray and Fannin Counties are scheduled for post check in the near future, since some question now exists as to



TABLE I

Final Summary Of Georgia Blister Rust Control Work By  
Counties And Ownership 1944-1946

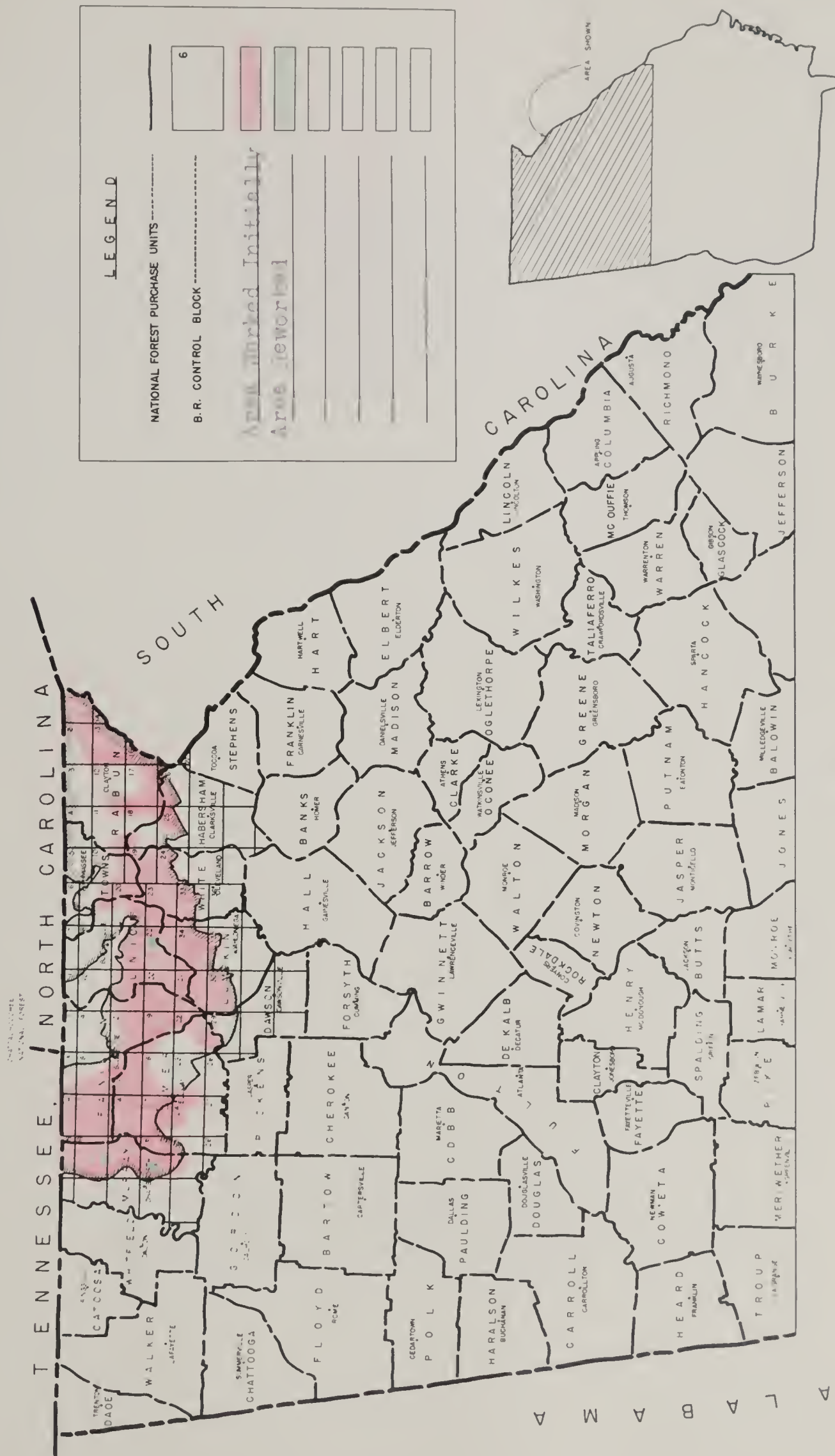
whether or not small areas may be in need of Ribes eradication in the near future. However, for the most part, it can be said that Georgia is now on a full maintenance basis and that a minimum of activity in that State will suffice to maintain control of blister rust for many years to come. As previously mentioned, better fire control practices, especially on State and privately owned lands, may hasten the expansion of white pine acreage into higher elevations in future years. If this should come to pass, some additional control measures might be advisable in certain localities where Ribes are known to grow.



## STATE: GEORGIA

MAP DESIGNATES: STATUS - PROGRESS - WORK PLAN, ETC.

DATE REPORTED: 12/31/58







WHITE PINE BLISTER BUST CONTROL

IN THE

STATE OF KENTUCKY

1946

WORK PROJECT BLR 3-2

By

Ralph W. Welch, Area Leader, Area II

Glendon E. Keaton, Field Supervisor





The systematic grid survey of Kentucky's white pine belt which in 1945 was continued during 1946. During the year 156 square miles were covered by a 2% per cent sample survey, whereby white pine and other data were recorded at 1/4 mile intervals and the results recorded on a grid map on a scale of 1 inch equals 1 mile. White pine counts were recorded in two main density classes (fifty or more stems per acre and under fifty stems per acre) and three diameter classes (0-4" D.B.H., 4-12" D.B.H. and over 12" D.B.H.). Ribes were recorded where found by number per acre and feet of livestock per acre.

Wild Ribes were discovered and destroyed at three new locations during the year. In addition, a "top-up" eradication job was performed on the one wild Ribes area previously known, which is located in the Whinery Top Hollow section of Wolfe County. Two of the three newly located Ribes areas were in Wolfe County on Devil's Creek and tributaries. The third area was in Lee County, in the Bald Rock section, near Oil past office. A total of 52 wild Ribes were found and destroyed in the Lee County area and the two initially worked areas in Wolfe County yielded 16 and 29 bushes respectively. Thorough examination of the environs of these three Ribes locations failed to reveal further Ribes growth.

The following tables are offered as a statistical recapitulation of the various phases of the control program as applied in Kentucky during the year.

Summary of Ribes Work Conducted in Kentucky, 1946

Agency	Acres Control Area		Acres White Pine		Man-Days Survey	Acreage Blocked Out as Ribes-Free
	Examined	Retained	Mapped	Retained		
Bureau	77,440	62,784	14,462	14,462	172	62,754
Forest Service	16,640	16,640	1,856	1,856	702	16,640
TOTAL	94,080 <sup>(1)</sup>	79,424	16,318	16,318 <sup>(2)</sup>	874	79,394

(1) 2,257 acres owned by Forest Service; remainder privately owned.

(2) 451 acres owned by Forest Service; remainder privately owned.

TABLE II

Summary of Ribes Eradication Work Conducted in Kentucky, 1946

Agency	Acres Worked Ribes-Free	First Working			Second Or Other Workings		
		Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days
Bureau	35,949	30	157	9	65	182	9
Forest Service	-	-	-	-	-	-	-
TOTAL	35,949	30	157	9	65	182	9

TABLE III

Cost of Control Work in 1946

Operating Agency	Amount Expended January 1 thru December 31, 1946	Balance of Funds Available Jan. 1 - June 30, 1946
Bureau of Ent. & Plant Quarantine	\$5,335.82	\$ 598.54
Forest Service	1,171.05	5,028.95
TOTAL	\$6,506.87	\$3,627.49



Page 20

STATUS AND SUMMARY OF CONTROL WORK IN KENTUCKY

AS OF DECEMBER 31, 1946

Blister rust control work was first begun in Kentucky in 1934 under NR, an emergency relief program. The initial working of the State was completed in that year. The estimates indicated the presence of 26,372 acres of white pine averaging 50 trees per acre or better and 35,850 acres of white pine averaging less than 50 trees per acre. A total of 61,523 acres of control area were examined and wild Ribes were found in one locality, that being Chimney Top Hollow in Wolfe County. In this section, 2,093 bushes were destroyed over an area of 65 acres.

The original coverage was by general reconnaissance, and no systematic strip or plot surveys were made. In order to obtain more definite figures, and to determine the amount of additional Ribes eradication work which would be necessary to maintain adequate control of the blister rust disease, a systematic system of survey was initiated in the State in 1945. Thus far in the resurvey program (which will probably be completed within the next six months), 18,354 acres of white pine averaging more than 50 trees per acre have been mapped and 17,208 acres averaging less than 50 trees per acre. In many sections, particularly within the purchase unit of the Cumberland National Forest, white pine seedlings are rapidly becoming established in areas which have been given good fire protection in recent years. The original estimated acreage of white pine on federal lands has already been equalled by the latest survey with a considerable acreage remaining to examine.

Although three new areas of native Ribes have been found which were hitherto unreported, the greater percentage of the entire Kentucky white pine belt is immune to attack from blister rust due to the limited occurrence of Ribes within the control area. Further Ribes areas may be discovered before the final survey has been completed, but it is not anticipated that Ribes growth will be found extensively over large areas.

Ribes eradication has proceeded according to schedule within the areas where Ribes have been found, and it is probable that these areas will be placed on a maintenance basis, which means that they will require very little future attention in order to preserve immunity from damage should the blister rust fungus ever gain entrance. To date, the disease remains unreported from the State of Kentucky, although its presence is known in every bordering State except one. It is expected that the blister rust control program now under way in the State will be completed by June 30, 1947, and that future programs of any magnitude will be unnecessary. The following table and map depict the status of the control work to date:

\* See page 103 for progress map which is included as a part of the Cumberland National Forest report.

Table 2

## Status and Summary of Control Work in Kentucky

As Of December 31, 1946

White Pine Acreage In Control Area	Estimated Control Acreage In State	Control Acreage Initially Worked	Control Acreage Re- worked	Total Ribes Des- troyed	Total Man- Days	Per Cent Initial Work Com- pleted	Acres On Main- tenance
32,417	152,156	(1) 122,156	65	5,029	1,183	80	122,156

(1) Approximately 30,000 acres remaining to examine.

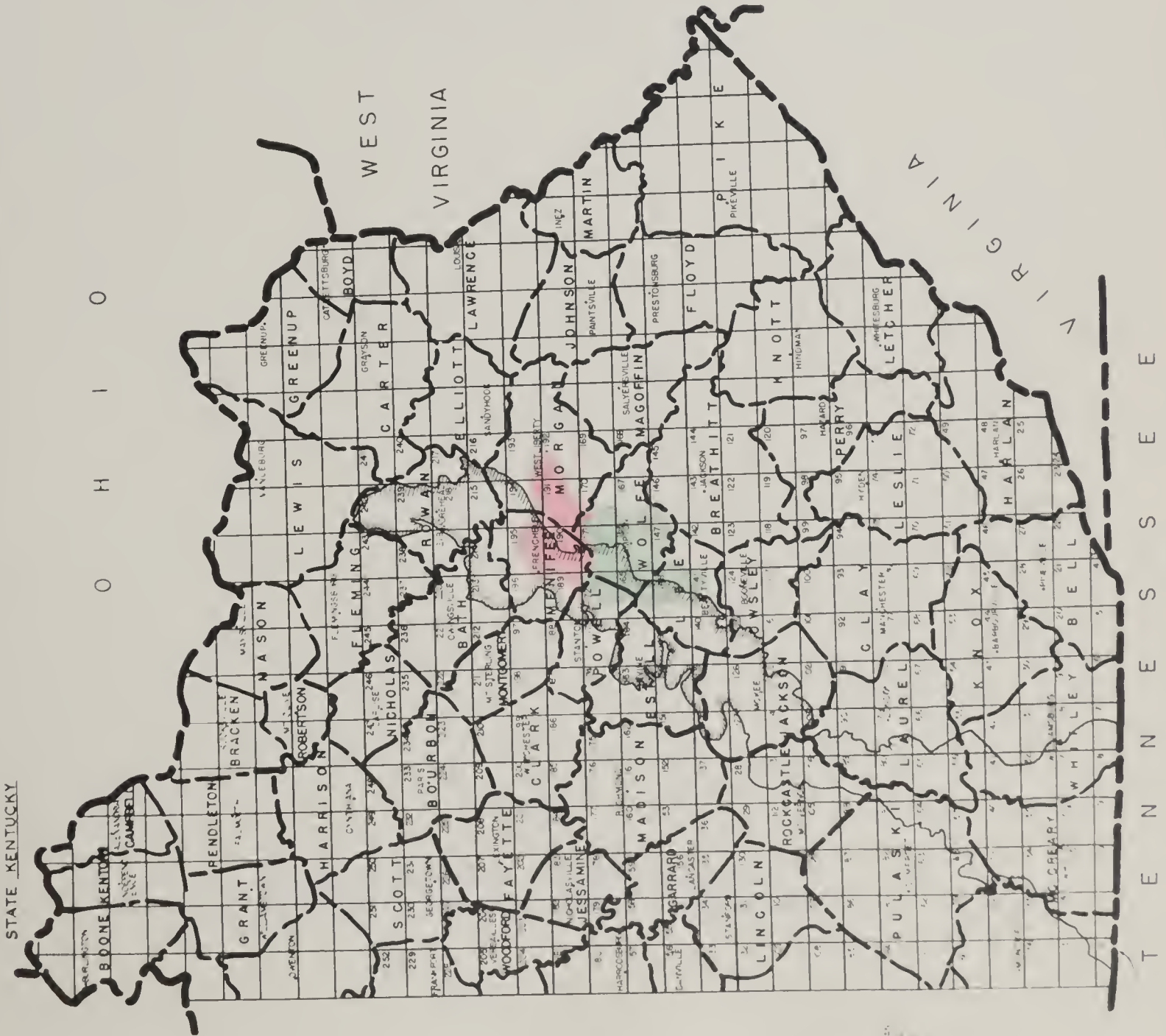


# WHITE PINE BLISTER RUST CONTROL

Status

MAP DESIGNATES (STATUS-PROGRESS-WORK PLAN, ETC.)

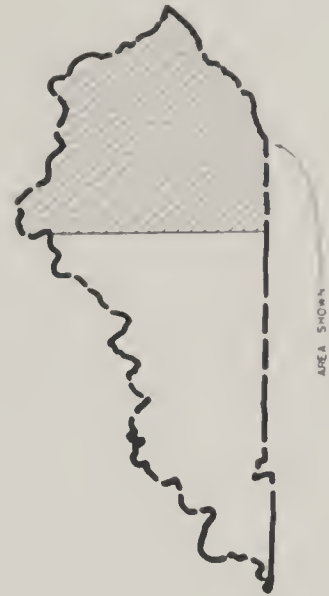
STATE KENTUCKY



## LEGEND

NATIONAL FOREST PURCHASE UNITS	6
B.R. CONTROL BLOCK	
Area Worked Initially	
Area Reworked	

SCALE  
0 20 40 MILES







WHITE PINE BLISTER RUST CONTROL  
IN THE  
STATE OF SOUTH CAROLINA  
1946

WORK PROJECT • BLR 3-2

By

Ralph W. Welch, Area Leader, Area II  
Glendon E. Maaton, Field Supervisor





### SUMMARY OF WORK IN 1946

A grid system of survey was begun in South Carolina in 1946 in order to accurately determine the status of white pine in that State and to ascertain the need of future eradication work. The survey was completed over 63 square mile grids in Oconee County in the white pine belt that extends eastward from Rabun County, Georgia and southward from Macon County, North Carolina. Although no areas of wild Ribes were found during the year, it was definitely determined that white pine acreage has greatly expanded in this section of South Carolina since the 1934-1935 original survey was completed, particularly within the purchase limit of the Sumter National Forest where fire protection has been efficient during the past few years. During the early years of the program, 3,467 acres of white pine were estimated to be present in Oconee County. At the end of 1946, with the resurvey uncompleted, a total of 16,792 acres of white pine have been mapped, 3,580 acres of which are owned by the Forest Service.

The survey now being conducted includes the examination of both white pine and protective cone burrings on a percentage sampling basis. Data are collected on strips spaced one-eighth mile apart. White pine counts are taken in such a fashion as to permit the computation of cones per acre and diameter size classes, and type maps on a scale of eight inches equals one mile are constructed by the examining crews. A search is made for the presence of wild Ribes at the same time the various areas are mapped.

During 1946, the work was performed by one to three mapping units of two men each, under the supervision of trained foremen. General headquarters were maintained at Walhalla, South Carolina. The crews covered an average of 79 acres per man-day at an over-all cost of eight cents per acre, including the cost of labor, operation and supervision. Funds utilized came chiefly from Bureau appropriations for conducting cooperative blister rust control projects on private and intermingled federal-private holdings, although some of the funds were provided by the U. S. Forest Service through a transfer of money originally set up for work on the Chattahoochee National Forest in nearby Georgia.

The following tables contain figures which indicate the extent of the work performed in South Carolina during the year:

## Summary of Survey Work Conducted in South Carolina in 1946

Agency	Acres Control Area		Acres White Pine		Man-Days Survey	Acreage Blocked Out as Ribes-Free
	Examined	Retained	Mapped	Retained		
Bureau	44,428	43,788	16,792	16,792	578	43,788
Forest Service			(Reconnaissance Work Only)			
TOTAL	44,428	43,788	16,792	16,792	578	43,788

\* 3,580 acres owned by Forest Service (Sumter National Forest)  
13,212 acres owned privately.

TABLE II

## Cost Of Control Work In South Carolina In 1946

Operating Agency	Amount Expended	Balance of Funds
	Jan. 1, thru Dec. 31, 1946	Available Jan. 1 - June 30, 1946
Bureau of Ent. & Pl. Quarantine	\$4,593.24	\$1,582.05
Forest Service	468.87	
TOTALS	\$5,062.11	\$1,582.05

## STATUS AND SUMMARY OF CONTROL WORK IN SOUTH CAROLINA

AS OF DECEMBER 31, 1946

As early as 1933 a limited amount of blister rust control work was performed in South Carolina. In that year, a small crew of CCC laborers treated and examined 888 acres of white pine and control area within the Santee National Forest. In 1934 Mr. J. H. Dean, working with P.W.A. funds continued the work in Oconee and Pickens Counties. Although no wild Ribes were found, 6,919 cultivated bushes were destroyed at home sites within the control area. Mr. Dean was succeeded by Mr. J. M. Mann in 1935, in which year the work in Greenville County was finished and a recheck made of many of the cultivated Ribes sites in Oconee and Pickens Counties. No further work was performed until 1938 when Mr. Mann performed some survey work in



In Georgia County in an area which had previously been investigated, also conducted 44 sites at which cultivated Ribes had been found in previous years. The "countdown" measured the focus of the majority of the sites which were re-investigated and only 12 Ribes in all were found and eradicated at the few places where sprouting had occurred.

No additional work was performed in the State until 1946 when a resurvey program was organized and placed into effect, in order to determine the latest status of white pine and the possible need of the application of further control measures. Work performed in the early years was not conducted in such a systematic manner as to permit accuracy with regard to actual acreage, densities and site groups of white pine. Furthermore, the possibility existed that wild Ribes might be present but undiscovered by the general scouting methods employed in effecting the programs conducted prior to 1946.

The resurvey program is based on the square-mile grid system which is in general usage throughout the Southern Appalachian Region. A 1% per cent representative sample check is conducted over the area to be surveyed with road-wide strips spaced at eight-mile intervals. White pine counts are taken and type maps constructed which indicate two broad density classes. Searches are made for wild Ribes growth on each strip as well as on previously growing sites between strips.

Thus far, wild Ribes have not been found, either in the original working of earlier years or during the resurvey to date. However, wild Ribes were very recently noted in adjoining North Carolina on the White water River about one to two miles north of the South Carolina border. This stream heads in the former State and flows into South Carolina, so it is entirely possible that wild Ribes may yet be found in this section, which has not yet been subjected to resurvey.

Latest figures gathered in the resurvey program indicate that white pine acreage has greatly increased in recent years. This increase is probably due largely to stricter regulatory measures with respect to forest fire control. This is especially true within the purchase unit of the Sumter National Forest. Where adequate protection from fire is offered, white pine grows exceptionally well in the mountainous sections of northeastern South Carolina. This area includes an extension of the large white pine belt to be found over a contiguous area covering several thousand square miles in northeastern Georgia and southwestern North Carolina. Although pure stands of white pine are the exception rather than the rule, the species forms a major constituent of the forest stand in many sections. Hardwood areas are understoreyed by substantial and ever-increasing amounts of young white pine in the higher elevations of the Tri-county area comprised of Oconee, Pickens and Greenville Counties.

The fact that wild Ribes are not commonly found in the association is of particular significance, since no dangers of damage from blister rust exist, other than in localities where cultivated Ribes might create some limited hazard. After completion of the current program of resurvey and re-examination, it is probable that the necessity of future expenditures to control the spread of blister rust within the State will be unnecessary.

or at least considerable. Even though areas of wild Ribes may not be found, it is not anticipated that there will be wide spread in occurrence to the extent of necessitating large scale expenditures to effect the suppression of their growth.

The following table and map\* is indicative of the cumulative status of past and present control programs conducted in the State:

TABLE III

Status And Summary Of Control Work In South Carolina  
As Of December 31, 1946

White Pine Acreage In Control Area (1)	Estimated Control Acreage In State	Control Acreage Initially Worked	Control Acreage Reworked (2)	Total Ribes Destroyed (All Cult.)	Total Man- Days	Acres On Main- tenance
20,197	89,428	44,428	29,635	7,487	1,614	44,428

- (1) Represents an increase of 3,050 acres over survey of earlier years.  
(2) Re-examination of Ribes-free acreage reported in earlier years.

RECOMMENDATIONS

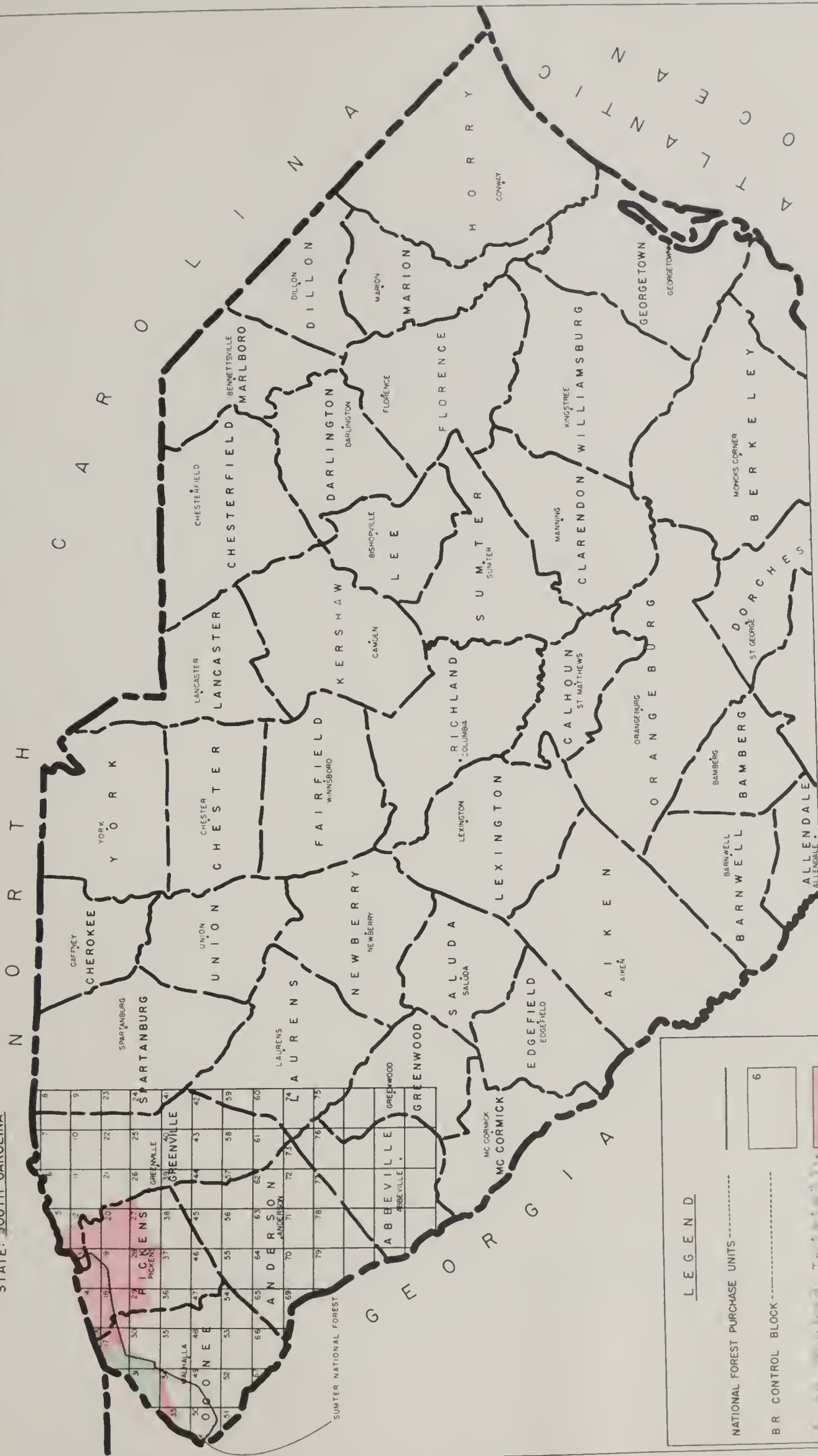
To complete the recovery now in progress will involve the examination of an estimated additional 45,000 acres of control areas. Originally, it was thought that a complete coverage of the State might be possible by June 30, 1947. However, the unpredictable spread of white pine to new coverage will probably make it necessary to extend the present program into the 1948 fiscal year.

\* For Progress Map, see page 116 Sumter National Forest Report.



MAP DESIGNATES: Status  
(STATUS - PROGRESS - WORK PLAN, ETC.)

DATE REPORTED: 12/31/46

STATE: SOUTH CAROLINA

SCALE

0 20 40 MILES

of A. S. Chavira

LEGEND

INTERNATIONAL FOREST PURCHASE UNITS -

B R CONTROL BLOCK

Free Method Training

Local Meetings, I

6

1111

1001

1141

1001

1141

1000





WHITE PINE BLISTER RUST CONTROL  
IN THE  
STATE OF TENNESSEE  
1946

Work Project - BLR 3-2

By

Ralph W. Welch, Area Leader, Area No. II





## SUMMARY OF WORK IN 1946

Blister rust control activities during the year were confined chiefly to Cumberland County, although a small project was carried on in Johnson County. The Ribes come-back in Cumberland County after initial working, which was accomplished in 1937-1938, was found to be quite heavy. In Johnson County, some evidence of come-back in local areas was revealed by post checks conducted in the Doe Mountain section which was worked last in 1942. White pine densities were found to have increased markedly in this section in the four year period elapsing between the two examinations.

A second working was brought to completion over the Cumberland County Ribes areas during the year, and future work in that county will be confined to periodical checks and application of local control measures where Ribes growth is found to exceed safe standards from the standpoint of spread of the disease.

Increases in allotted funds for Tennessee permitted an expansion of the program, and as a result a considerably larger acreage of Ribes-bearing land was covered and more Ribes were destroyed than in 1945. For example, the acreage of Ribes-bearing land covered in 1946 was double the figure for 1945, and the number of Ribes destroyed were five times greater in 1946 than in 1945.

TABLE I

Status and Summary of Control Work In Tennessee  
As Of December 31, 1946

W.P. Acreage In Con- trol Area	Control Acreage In State	Control Acreage Initially Worked	Control Acreage Re- worked	Total Ribes Des- troyed	Total Man- Days	Per Cent Initial Work Completed	Areas On Main- tenance
760,149	1,831,257	1,831,257	17,567	6,577,311	48,034	100	1,601,188

## COOPERATION

The work in 1946 was performed through the combined efforts of the U. S. Bureau of Entomology and Plant Quarantine, the Tennessee Department of Conservation and the Tennessee State Entomology Department. The first two agencies provided the funds necessary to perform the work and the latter agency assisted through control of shipments of cultivated species of Ribes into areas regulated by State and Federal quarantine laws. Funds were also provided by the U. S. Forest Service for work on the Cherokee National Forest in the 1947 fiscal year, although these funds will not be utilized until the spring of 1947. Funds provided by the Tennessee Department of Conservation were used to pay the salary of Edward L. New, Field Supervisor and Robert A. Howard, Foreman for a part of the year.

### TABLE II

Summary of Ribes Eradication In Tennessee, 1946

State	FIRST WORKING				SECOND WORKING		
	Acres Worked	Acres Ribes Bearing	Ribes Destroyed	Man-Days	(1) Acres Ribes Bearing	Ribes Destroyed	Man-Days
Bureau & State	-	-	-	-	2,010	54,118	1,015

(1) In addition, 1,000 acres were examined and excluded as free of Ribes

## INFECTION CONDITIONS

Intense scouting for blister rust infection in the Willen Gap section of Johnson County was performed in August and September, but no evidence of the disease could be found on either the Ribes or pine host. This area was singled out for intense scouting since infected Ribes were reported from this section in 1941, and since a rather heavily infected area of white pine is known in adjoining Ashe County, North Carolina only a few miles east of Willen Gap. It was expected that the fungus might have gained entrance to white pine with the 1941 wave of Ribes infection. However, it now seems probable that climatological conditions might have been unfavorable for dissemination of the disease from Ribes to white pine in that particular section, and that no white pine infection resulted.



TABLE III

Cost Of Control Work In 1946

Operating Agency	Amount Expended January 1, thru December 31, 1946	Balance of Funds Available January 1 thru June 30, 1947
Bureau (3101 & 3103 funds)	\$10,387.58	\$1,789.68
State Conservation Comm.	922.00	1,640.00
TOTALS	\$11,309.58	\$3,429.68

RECOMMENDATIONS

Although it is entirely probable that the disease might already have gained entrance to white pine at some other point in northeast Tennessee, it is improbable that extensive commercial damage has been inflicted since initial and partial second workings have been completed within the Ribes areas where serious infection might otherwise have been a certainty. A reasonable amount of vigilance in the future should serve to maintain good control over the spread of blister rust in the State of Tennessee. Occasional post checks and local eradication jobs wherever found necessary due to Ribes cone-backs in previously worked areas should suffice to control the disease in the immediate future.

The National Park Service resurveyed 8,835 acres of the Tennessee side of the Great Smoky Mountains National Park during the year. Accomplishments by the National Park Service are summarized in separate reports for each National Park in the Region.





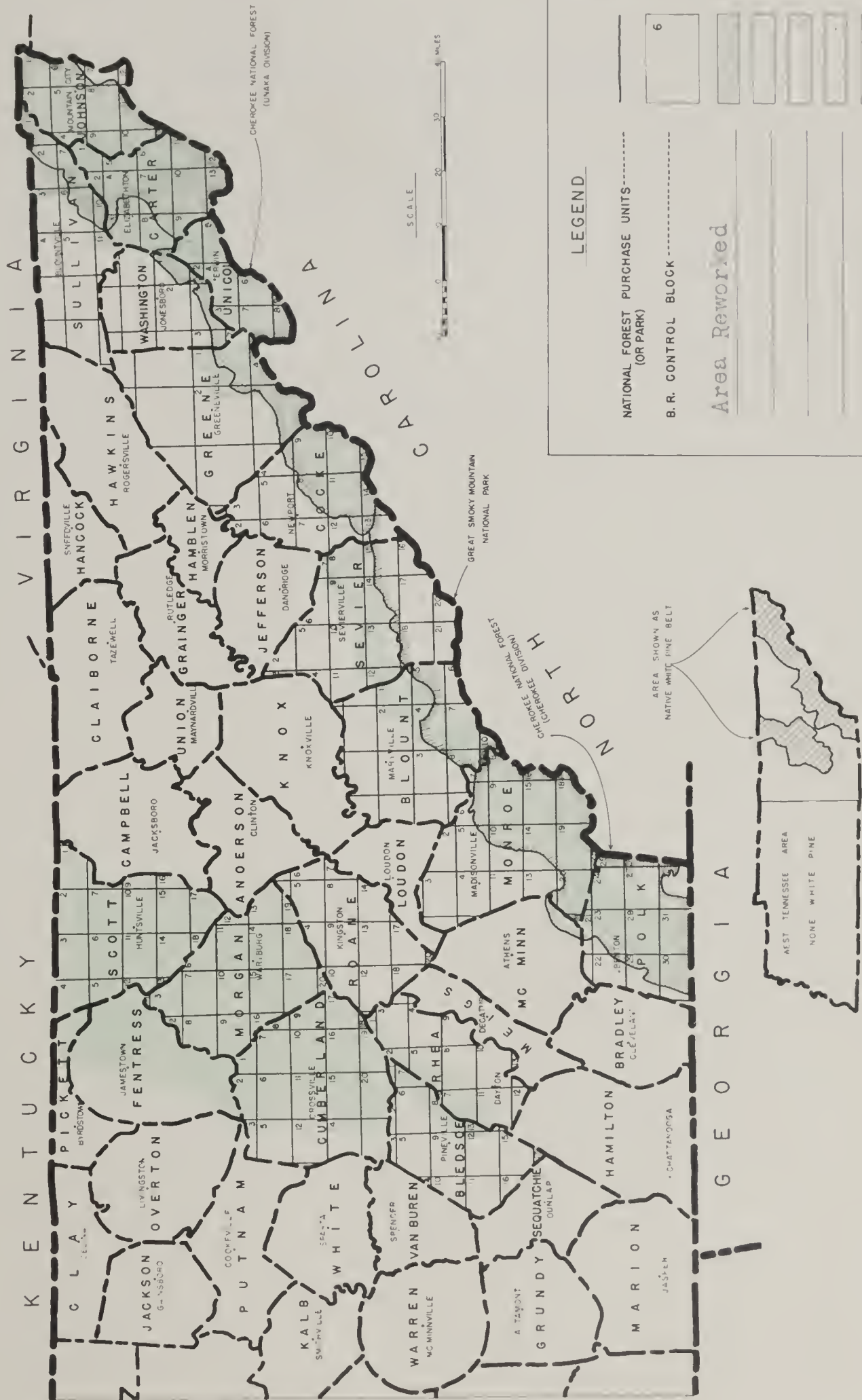
# WHITE PINE BLISTER RUST CONTROL

Status

MAP DESIGNATES (STATUS-PROGRESS-WORK PLAN, ETC.)

DATE REPORTED: 12/31/46

STATE: TENNESSEE







WHITE PINE BLISTER RUST CONTROL

IN THE

STATE OF WEST VIRGINIA

1946

WORK PROJECT BLR 3-2

By

Ralph W. Welch, Area Leader, Area II





### SUMMARY OF WORK IN 1946

Control operations during the year were conducted in Greenbrier, Hampshire, Hardy, Mercer, Pendleton, Pocahontas and Raleigh Counties. All Ribes eradication work necessary at the present time was completed in Pocahontas County, where Ribes growth has been suppressed to the extent that additional eradication measures may not be needed for a period of several years. The Raleigh County survey was also completed during the year, although a considerable amount of eradication remains unfinished. Satisfactory progress was made on both survey and eradication in Greenbrier, Hardy and Pendleton Counties, but surveys only were conducted in Hampshire and Mercer Counties.

Surveys were conducted over 175,611 acres of control area within which 59,662 acres of white pine were examined, mapped and classified as to density and diameter sizes. Surveys are performed in advance of actual Ribes eradication in order to delimit the areas of better pine and to determine those areas upon which protection measures (Ribes eradication) should be applied. The over-all cost of conducting the survey in 1946 amounted to an average of eight cents per acre, including all supervisory, operational and labor costs. During the year, surveys were brought to completion over the entire purchase unit boundaries of both the Monongahela and George Washington National Forests.

Ribes were destroyed over a total of 19,236 acres of control area during the year. In addition, 50,041 acres were examined and found to be free of Ribes growth. A total of 331,401 Ribes bushes were destroyed which is an average of 18 bushes per acre. The over-all cost of performing the eradication job over the 19,236 acres of control area which was found to bear Ribes growth amounted to an average of \$2.08 per acre. However, the net cost of the entire job including the destruction of the Ribes and the examination of the Ribes-free acreage averaged only 63 cents per acre.

The volume of blister rust control work accomplished in 1946 was considerably greater than in the previous year in spite of the fact that costs per acre were considerably higher in the current year. The increased cost can be attributed to higher wage rates which necessarily were paid in order to secure an adequate amount of labor to conduct the program. A brief comparison of accomplishments in the past two years is offered here in the form of the following table:

TABLE I

Comparison of Work - 1945 and 1946

Year	Acreage Sur-veyed	Average Ribes-Bearing Acreage Worked	No. Ribes Destroyed	Per Acre Cost Of Eradication
1945	128,100	11,454	238,325	\$1.48
1946	175,611	19,236	331,401	\$2.08

TABLE II

Status and Summary of Control Work in West Virginia  
As Of December 31, 1946

W.V. Acreage In Control Area	Control Acreage In State	Control Acreage Initially Worked	Control Acreage Re-worked	Total Ribes Destroyed	Total Man-Days Labor	Per Cent Initial Work Completed	Acres On Main-tenance
340,599	865,473	843,689	108,533	6,908,755	65,814	97	647,195

COOPERATION

The 1946 control program was carried out through the cooperation of the Bureau of Entomology and Plant Quarantine, the United States Forest Service, The West Virginia Conservation Commission and the West Virginia Department of Agriculture. The Bureau provided technical supervision for conducting the work and allotted funds for work on private lands within the State. The West Virginia Conservation Commission also provided funds for carrying out the work on State and private lands and provided other technical services, the combined value of which amounted to \$6,674.56, of which amount \$6,574.56 was in the form of cash of appropriations earmarked exclusively for winter rust control work in the 1946-1947 fiscal years. The West Virginia Department of Agriculture assisted in the program through nursery inspection and through regulations aimed at control of shipments of cultivated Ribes bushes into the State.



The U. S. Forest Service allotted sufficient funds to perform necessary eradication work in the Monongahela and George Washington National Forests. Within these two National Forests is to be found 25 per cent of the entire white pine acreage within the State. As a result of continued cooperation between the Bureau and the Forest Service during the past several years, it has been possible to conduct the work on federal lands according to a planned work schedule, and all necessary eradication work at this time is nearing completion. Thereafter, it will be possible to concentrate wholly upon the control problem which exists on State and private lands. If the splendid cooperation afforded by the West Virginia Conservation Commission in past years is continued into the future the entire State may be placed completely on a maintenance basis within a few years, after which a minimum of attention will be needed to maintain control of blister rust.

TABLE III

Summary of Ribes Eradication In West Virginia 1946

Agency	Acres Worked Ribes Free	FIRST WORKING			SECOND WORKING		
		Acres	Ribes Des- troyed	Man- Days	Acres	Ribes Des- troyed	Man- Days
Bureau & State	1,777	907	31,347	509	12,745	157,505	3,503
Forest Ser Monon- gahela	1,160	425	21,812	105	2,475	34,432	538
For. Ser. George Washington	2,978	462	55,892	408	1,211	32,415	406
SUB-TOTAL Forest Service	4,138	1,897	75,704	513	3,686	66,845	944
TOTALS	5,915	2,804	107,051	822	16,432	224,350	4,447

WHITE PINE PRODUCTION

Production of white pine lumber in West Virginia continued at an accelerated rate in 1946. The annual cut was higher than in any of the years during the war period, and was twice as great as the average annual production for the forty-three year period beginning in 1904. More white pine lumber was produced in the State in 1946 than in any

year since 1912, when the best of the original virgin stands were being harvested. The following table indicates the board foot production figures for the past five years.

TABLE IV

Estimated Board Foot Production of White Pine  
In West Virginia By Years

YEAR	PRODUCTION
1942	4,447,000
1943	17,357,000
1944	12,231,000
1945	15,755,000
1946	18,627,000
FIVE YEAR TOTAL	38,417,000

PERSONNEL AND LABOR

In general, the State is divided into three geographic districts for the purpose of administering the various phases of the control work. Pendleton, Hardy and Hampshire Counties form the northernmost work unit in the State. Later, when it becomes necessary to perform work in Morgan and Berkeley Counties, this area will also be included in the northern district. At present, the work in this section of the State is being conducted from Lost River in Hardy County. Mr. C. M. Fultz is in charge of the field station from which the work is performed. Formerly, headquarters were maintained at Petersburg, but due to the retirement of Mr. G. C. Hamilton, whose headquarters were maintained at that point for a number of years, some changes resulted.

Work in Pocahontas, Greenbrier and Tucker Counties are conducted from Marlinton, which also serves as a central clerical office for the entire State. Mr. D. L. Gillispie is the Field Supervisor in charge at that point. Raleigh, Mercer, Summers and Monroe are included in the southernmost district, where headquarters are maintained at Beckley with Mr. G. E. Keaton in charge. Mr. Keaton has also been supervising small survey units in Kentucky and South Carolina.

Some amount of difficulty was experienced in securing adequate labor in local sections of Hardy County during the past year. For the most part, however, we have been able to secure a sufficient amount of labor to meet our demands, which are not great. Wage rates as set up where found to be somewhat low and not particularly inducing in some sections, but adjustments are expected within the next year.



## Blister Rust

Blister rust was first discovered in all of the counties bordering the Ohio river some point of the Ohio river valley (about at northern extremity of the part only to about County at the southern extremity). It is probable that the disease first gained entrance in the late 1920's, spreading southward from Pennsylvania and Maryland. It has become firmly established in all counties of the pine belt except Allegheny, Mercer, Summers and Monroe Counties. In this section it has not yet been discovered on white pine although reported on loblolly.

In spite of the fact that the disease is quite widespread, commercial damage has been held to a minimum through the effectiveness of the control program throughout the years. It is true that some damage has occurred in local sections where control measures were not applied at a date early enough to curtail the spread of the disease, but for the most part the killing effects of the disease are noticeable only in those sections where ribes eradication was not practiced due to low density and poor quality white pine. This is particularly noticeable along the crest of some of the higher mountains (such as the Shenandoah) where white pine forms some part of the forest stand, yet is not of sufficient consequence to merit application of control measures. From such damaged areas, we can gain some insight as to the probable amount of infection and consequent damage that might have resulted to the better pine stands had not ribes eradication been performed.

There is no reason to doubt that the spread of the disease can continue to be held in check and that damage can be held to a minimum in the future if the relatively cheap ribes eradication program is continued until a complete sweep working of the State has been achieved. Thereafter, a reasonable amount of vigilance accompanied with occasional workings should suffice to control the disease with small yearly appropriations.

## NURSERY REGULATION AND QUARANTINE REGULATIONS

The Entomologist of the State Department of Agriculture reported that he received request for shipment permits from 257 individuals who desired to establish cultivated ribes at one point or another within the State. Permits were granted to 235 of the applicants, since the ribes were to be planted outside of our control areas, where no damage would be involved from the standpoint of spread of blister rust. Refusals were necessary in case of the other 22 applicants, since the shipments were to have been made inside the prescribed control area.

Several privately owned nurseries were inspected during the year by the Entomologists, but none were found to grow white pine in commercial quantities. No control work was performed this year in the vicinity of



The U. S. Forest Service nursery at Parsons. Although the nursery is scheduled for reworking in 1947. The only other large producer of white pine seedlings is the State owned nursery at Lesage, West Virginia, and the control area of this nursery is entirely free of rips.

TABLE V

## Cost of Control Work in 1945

Operating Agency	Amount Expended Jan. 1 - Dec. 31, 1945	Balance of Funds Available Jan. 1 - June 30, 1946
Bureau of Ent. & Plant Quarantine - 3103	\$28,352.23	\$ 5,554.08
State Conservation Commission	6,574.50	5,592.63
<b>TOTAL COOPERATIVE</b>	<b>\$35,226.73</b>	<b>\$ 9,146.71</b>
Forest Service Monongahela	7,859.15	1,400.40
Forest Service George Washington	8,753.09	6,322.92
<b>TOTAL - FOREST SERVICE</b>	<b>\$16,612.24</b>	<b>\$ 7,723.32</b>
<b>TOTAL - ALL FUNDS</b>	<b>\$51,879.09</b>	<b>\$16,870.03</b>

## SUMMARY AND RECOMMENDATIONS

The second working program has progressed satisfactorily, especially within the purchase units of the Monongahela and George Washington National Forest. These two areas contain a total of 77,635 acres of federally owned white pine and several thousands of acres of intermingled private pine. Within the next six months a second working will have been completed over the entire area which encompasses 268,191 acres of control. Less than 10 per cent of this acreage will require a third working, and that can be deferred from five to eight years from the present date.

Although virtually all private control area within the State has been worked at least once, there remains approximately 150,000 acres of ripeness-bearing control area that should be examined and reworked where necessary within the next few years. After completion of this task, blister rust control activities in the State can safely be curtailed, at least for a number of years. Eventually, some of the areas will need a third working, but rips in many localities have been suppressed in the first and second workings to the extent that third workings may safely be delayed for periods of eight to ten years. The immediately goal is to complete the second working which is already well underway and to this end it is recommended that cooperative efforts of the various Federal and State agencies be continued as in the past.

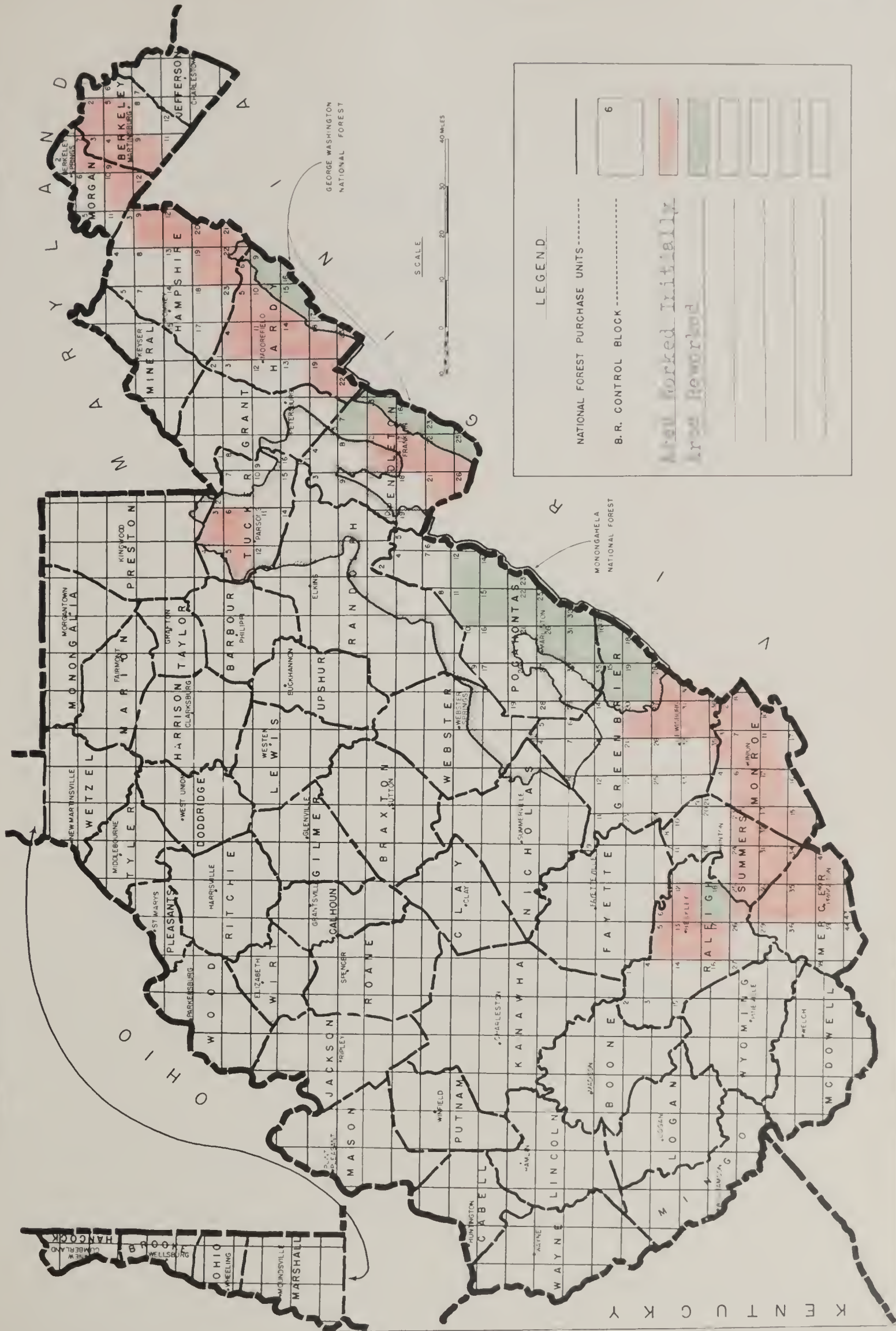


# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Status  
(STATUS-PROGRESS-WORK PLAN, ETC.)

DATE REPORTED: 12/31/46

STATE: WEST VIRGINIA







PART III

Work Project BIR-4

Detailed Reports on Blister Rust Control on  
National Forests - 1946

By

Henry E. Yost, Area Leader, Area No. I

William V. Zimmer, Assistant Area Leader, Area No. I

Ralph W. Welch, Area Leader, Area No. II





WHITE PINE BILATER RUST CONTROL  
IN THE  
GEORGE WASHINGTON NATIONAL FOREST  
1948

WORK PROJECT - BLR 4

By

Henry E. Yost, Area Leader, Area I  
Ralph W. Welch, Area Leader, Area II





### STATUS OF CONTROL

The following table shows the status of control work on the George Washington National Forest as of December 31, 1945.

TABLE 1  
Status of Control  
(Actual Ownership)

State	Acreage Under Title To Control Areas	Control Acres In Forest	Control Acres Initially Located	Control Acres Re- located	Per Cent Initial Work Completed	Acres On Title Records
West Virginia	50,779	60,175	61,582	2,658	87	48,123
Virginia	108,824	257,191	211,645	45,344	90	153,177
TOTAL	159,603	305,366	266,207	55,022	90	197,330

Survey work has been completed on all of the Forest Service holdings in West Virginia. In Virginia the work is approximately as follows:

### APPROXIMATE PER CENT COMPLETED

<u>Ranger District</u>	<u>Survey</u>	<u>Eradication</u>
Lee Ranger District	20	0
Dry River Ranger District	100	80
Deerfield Ranger District	90	80
Cure Springs Ranger District	60	10
Bedlar Ranger District	10	0

It should be remembered that practically the entire Forest was surveyed and worked initially during a period from about 1922 to 1939. The only accurate comparison that we have for the acreage on this original survey and the resurvey is for West Virginia.

The first survey and initial working of this section of the George Washington National Forest was completed in 1940, when 2,282 acres

of white pine were protected from blister rust by working 43,508 acres of control area (white pine plus protective zone). The recently completed survey reveals an increase of 9,427 acres of white pine and an increase of 9,507 acres of control area. Thus, white pine has increased by 45 per cent between the completion of the first and second surveys. Aside from the completed resurvey, second workings of Ribes areas have been completed within all of the Dry River Ranger District in Pendleton County, and a good majority of the pine stands in Lee District have also been protected twice. Barring difficulties in securing an adequate amount of labor, it is possible that all second work within the entire Forest (in West Virginia) may be completed by the end of the current fiscal year.

The status of the disease may be briefly described as follows: In the Lee Ranger District the disease is present on pine but very little damage is believed to have occurred. In the Dry River Ranger District infection is generally distributed in the pine and Ribes areas but the damage is negligible except at the higher elevations, such as along the Rockingham-Pendleton County line. In the Deerfield Ranger District the situation is much the same. There is fairly heavy infection present on the mountain tops in the vicinity of the Augusta-Highland County line and extending generally southwest for a relatively small distance. In the Warm Springs Ranger District the disease was found to be doing some damage in the vicinity of Warm Springs in about 1940. On the resurvey, which covers roughly the northern half of Bath County to date, no extensive damage has been found. In the Pedlar Ranger District an old infection has been found in the vicinity of Montebello on both private and Federal owned lands. While the rust is generally scattered throughout the boundaries of the Forest, very little commercial damage has taken place. The principal stands of white pine in the lower drainages have suffered but very little, since eradication measures were applied early enough to prevent heavy loss. With the completion of the second working program, Ribes will have been depopulated to the extent that damages from infection in the future will be greatly minimized although some amount of future attention will be necessary in order to maintain the gains already made against the disease. Future workings will be far less expensive than past workings.

The present indications are that probably 50 per cent or more of the pine-bearing lands on the Forest are Ribes-free. On approximately 40 per cent more, Ribes will be relatively light. The remaining approximate 10 per cent will present a problem for several years to come.



## WEST VIRGINIA DISTRICT FOREST IN 1946

The following table gives a resume of the survey work during the year.

TABLE II

### Resurvey

State	Acres W.P. Mapped	Control Acres Mapped & Re-surveyed	Approximate Per Cent Complete	No. of Cells Resurveyed
West Virginia	16,631	49,880	200	180
Virginia	34,948	115,000	66	273
TOTAL	51,579	165,880	90	453

In West Virginia, surveys were conducted over 120 square mile grids in the Lee Ranger District where 16,631 acres of white pine and 49,880 acres of control area were mapped and examined on Federal and intermingled private land in Hardy and Hampshire Counties. The survey program was considerably accelerated above the previous year's program in order that all surveys might be completed, thus facilitating the draft of final work plans for eradication measures.

Survey work in Virginia was carried on in Shenandoah, Augusta, and Bath Counties. The rate of the survey work is being stepped up in an attempt to complete the resurvey of the entire Forest by the end of the fiscal year 1948.

Ribes eradication work was confined principally to Hardy County on the West Virginia side of the Lee Ranger District and to Rockingham, Augusta, Highland and Bath Counties on the Virginia side. All necessary eradication work for the present has been completed on Forest Service lands in Pendleton County but a small amount remains to be done in Hampshire and Hardy Counties. The labor supply was generally adequate during the year although some difficulties were experienced. With the opening of the apple picking season eradication work was severely curtailed due to the heavy seasonal demand for labor. The eradication and post checking work is generally following fairly well with the survey, particularly in West Virginia, although in Virginia there has been surveyed to date over 60,000 acres of Ribes-bearing land on which bushes have not been destroyed. The following table gives a resume of the Ribes eradication work for the year.

TABLE III

Summary of Ribes Eradication By Forest Service  
On George Washington National Forest  
1946

State	Acres Covered Ribes Free	Ribes Bearing Acreage Worked			Ribes Destroyed	Man-Days Used	Approximate Acreage Ribes Bearing to Be Worked
		Initial	Rework	Total			
West Virginia	2,978 <sup>(1)</sup>	1,462	1,211	2,673	86,305	815	1,500
Virginia	72,712	4,316	4,026	8,342	555,260	3,911	61,486
TOTAL	75,690	5,778	5,237	11,015	641,565	4,726	62,986

(1) In addition, 7,672 acres were blocked out as Ribes-free (second working) by survey and/or post check.

The following table gives a resume' of the land worked during the year by ownership:

TABLE IV

Acreage Worked 1946 By Actual Forest Service Ownership

State	Acres Covered Ribes-Free	Ribes-Bearing Acreage Worked		Total Acres Worked
		Initial	Rework	
West Virginia	1,798 <sup>(1)</sup>	795	244	2,837
Virginia	5,917	5,104	3,426	14,447
TOTAL	7,715	5,899	3,670	17,284

(1) Initial working only; in addition 3,351 acres examined and eliminated as Ribes-free on second and third workings.

Table III shows the work performed by employees paid from Forest Service funds. Due to the manner in which Forest Service and private lands are frequently intermingled it is necessary that crews paid by the Forest Service do a considerable amount of work on private lands. Crews paid from cooperative funds likewise do a large amount of work on Federal holdings. For administrative reasons it is impractical to work both



over "to the line". To the amount of money that is to be used for the amount of work which is to be done the other part is money.

### COSTS

The following table shows the costs in each State during the year.

TABLE V

Summary of Expenditures in 1946

State	Labor	Supervision and Operation	Total	Cost Per Acre *	
				Eradication	Survey
West Virginia	\$ 6,627.32	\$ 2,165.77	\$ 8,793.09	\$ 2.31	\$ 0.06
Virginia	32,209.21	6,571.01	38,780.22	2.22	0.07
TOTAL	\$38,836.53	\$8,736.78	\$47,573.31	\$2.24	\$0.07

\* Per acre figures based on effective man days used on Ribes eradication and survey.

Both the labor and operating costs during the year in many respects have been the highest yet experienced. This is due to the general increase in rates for blister rust work in the Region as a whole. However, the costs on the George Washington National Forest are among the lowest of the various forests in the region.

### COOPERATION

During the year the previous arrangements were continued for our assistance in fire fighting when necessary. Fortunately not many man-days were required during the year. After the close of eradication season a 1½ ton truck was left stationed in the vicinity of Hopkins Gap in charge of our foreman who was also a forest fire warden. One other truck was similarly held in readiness at Stokesville. During the year the Forest Service continued to make available shop facilities in Bridgewater. The arrangement was the same as in the past, except that about one day per week the greasing facilities were made available for Forest Service equipment. We are pleased to report excellent cooperation on the part of the entire Forest Service personnel and particularly the rangers in the districts on which we have been working.

CONFIDENTIAL FEB. 1947

Since surveys have been completed on that part of the George Washington National Forest falling in West Virginia, all efforts will now be expended towards completion of the eradication program. The remainder of the work is located in Hardy County, although some eradication remains in Hampshire County. There is some possibility that all eradication work necessary at present may be completed by June 30, 1947. However, completion of the work by that date depends upon the amount of labor which may be available in the localities where needed.

In Virginia it is planned to complete the resurvey in the Deerfield Ranger District, all that remains in that part of Rockbridge County. Survey will be continued in the Lee and Warm Springs Ranger Districts with a possibility of completing each. The resurvey is highly important in order that we can determine the eradication needs for the Forest as a whole. However, the most pressing problems on eradication are taken care of as revealed by the survey. If present survey rates can be continued it is reasonably certain that the resurvey for the entire Forest can be completed by the end of the calendar year 1948. No estimate can be made so far in advance regarding the eradication but there does not appear to be any likelihood that present eradication can be completed by that time unless there is a considerable increase in the number of man-days becoming available.



WHITE PINE BLISTER RUST CONTROL

IN THE

JEFFERSON NATIONAL FOREST

1946

WORK PROJECT - BLR 4

By

Henry E. Yest, Area Leader, Area No. I  
William V. Zimmer, Assistant Area Leader, Area No. I





### STATUS OF CONTROL

The following gives briefly the status of the survey, eradication and the disease by Ranger Districts:

#### Survey

Glenwood Ranger District: Survey completed in 1943.

New Castle Ranger District: A small amount of resurvey has been completed in Botetourt County. Probably no additional work will be carried on in this district before late in 1947.

Wythe Ranger District: Survey is completed for that part in southern Wythe and Grayson Counties. That part in Carroll County will be completed early in 1947, and it will probably be completed for the entire district early in 1947.

Holston Ranger District: Survey completed in 1946.

Clinch Ranger District: No white pine is known to be present.

#### Ribes Eradication

Glenwood Ranger District: Eradication was completed in 1943 and no additional work will be needed until about 1949 or 1950 when a check should be made to determine the status.

New Castle Ranger District: No work has been done for several years and the need for it cannot be determined until the survey is completed.

Wythe Ranger District: A relatively small amount of work is necessary in the southern part of this district which is scheduled for completion during 1947. The status of the northern part of the district cannot be determined until the survey is completed but the indications thus far are that a relatively small amount of work will be necessary.

Holston Ranger District: All of the eradication work found necessary is completed. Due to the presence of the blister rust on pines, however, it will be necessary that frequent post checks and careful eradication be continued for a few more years.

### STATUS OF THE RUST

Blister rust has been found in all the white pine counties having Jefferson holdings except Carroll County. Very light infections have been found on pine in Alleghany, Roanoke, Montgomery and Giles Counties. The extent of the loss in these counties, however, is negligible insofar as known. A comparatively recent infection was found in the vicinity of Comer's Rock in Grayson County. While it covered only a few acres the percentage of infection ran very high. A detailed study was made of this infection and all the rust found was pruned out of the trees in the course of this study. This will probably have a retarded effect on the spread of the rust in that immediate locality but cannot be regarded as a control measure. A few infected trees were found in Washington County along U. S. Route #58 near the Washington-Grayson County Line.

In general, the rust is present or within striking distance of the entire forest although the extent of the loss to date from blister rust is believed to be very light.

The following table gives a resume of the status of the work as indicated by the resurvey. It should be borne in mind that the resurvey is only about 60 per cent complete.

TABLE I

Status of Ribes Eradication On The Jefferson National Forest

Acreas W. P. In Control Area	Control Acreage In Forest	Control Acreage Initially Worked	Control Acreage Re- worked	Per Cent Initial Work Complete	Acreage On Main- tenance
47,612	85,402	82,384	4,713	96	77,613

### BLISTER RUST CONTROL WORK IN 1946

During the year the survey was completed in Grayson and Wythe Counties and work was begun in Bland, Pulaski, and Carroll Counties. In many cases it was found that the pine had increased in density as well as extended itself in acreage since the time of the last survey, which was about 1937.



The following table shows the number of control acres resurveyed and the amount of white pine found by the crews being paid from Jefferson National Forest Funds. These figures included very much land intermingled with, and adjacent to National Forest holdings.

TABLE II

Acres of White Pine Mapped	Acres Control Mapped	Approximate Per Cent Resurvey Completed
47,119	152,953	60

### RIBES ERADICATION

Most of the eradication work during the year was confined to the mountain range along the northern boundary of Crayson County and the southern boundary of Wythe and Smyth Counties. The following table shows the work accomplished by crews while being paid from Jefferson National Forest Funds, and like the survey work, some was performed on intermingled and adjacent private holdings.

TABLE III

Acres Covered Ribes-Free	Ribes-Bearing Acreage Worked			Ribes Destroyed	Man-Days Used	Approx. Ribes-Bearing Acreage To Be Worked
	Initial	Rework	Total			
77,480	9	390	399	25,141	249	4,771

The following table shows the eradication work carried on during the year on lands owned by the Jefferson National Forest regardless of funds from which the crews were being paid at the time. This work was carried on in the same vicinity as that indicated above.

TABLE IV

Acres Covered Ribes-Free	Ribes-Bearing Acreage Worked		
	Initial	Rework	Total
10,584	29	355	10,968

EXPENDITURES

The following table shows the amount of expenditures per acre for the calendar year. This includes only Forest Service Funds expended.

TABLE V

Labor	Supervision And Operation	Total	Cost Per Acre	
			Eradication	Survey
\$13,110.19	\$1,740.70	\$14,850.89	\$5.70	\$0.07

WORK SCHEDULE FOR 1947

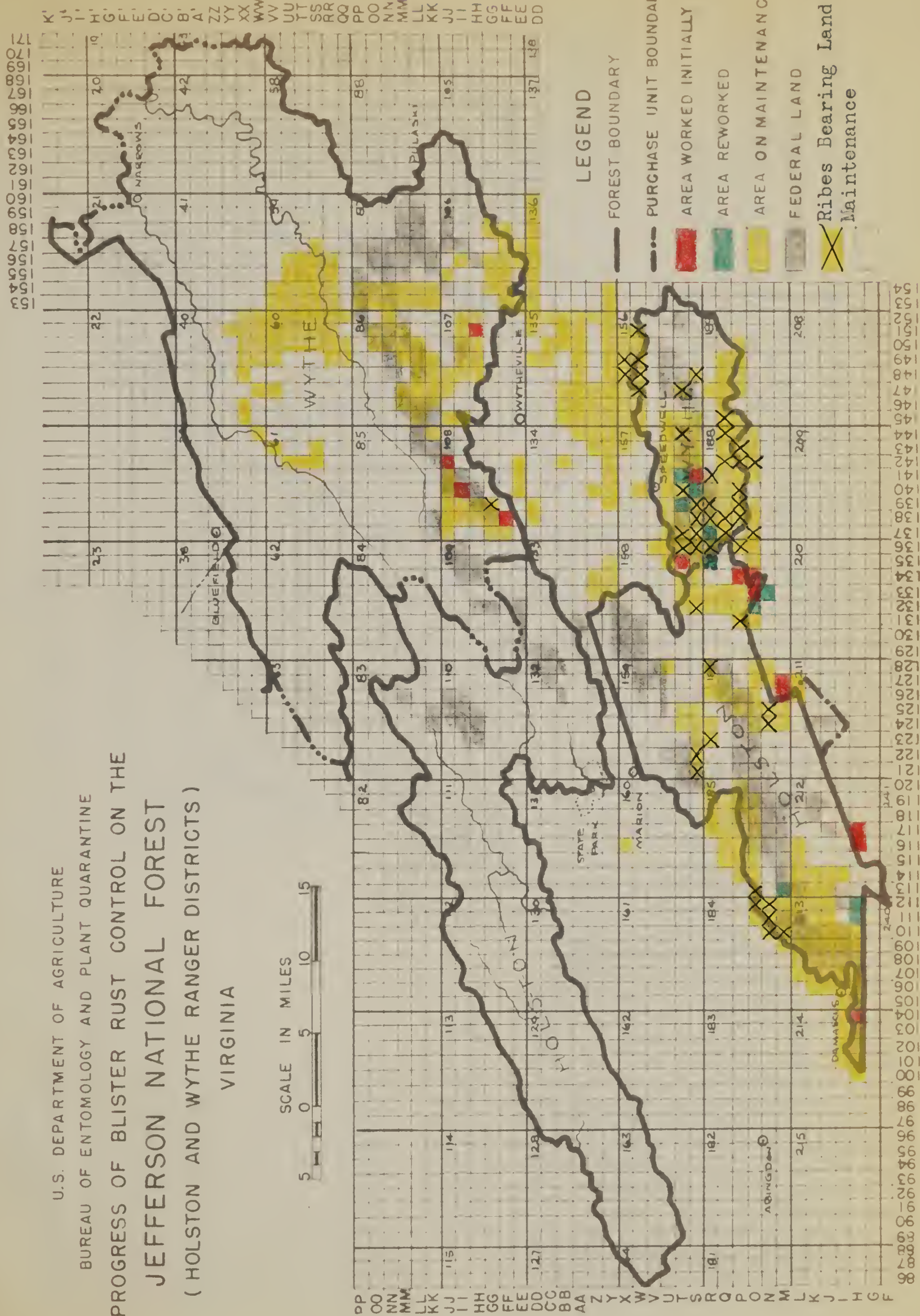
During the next year we are hoping to complete all the necessary eradication work in the Wythe Ranger District and make a general examination and possibly a formal check on the Ribes-bearing areas in the Holston Ranger District. In addition to the above we are hoping to complete the resurvey in the Wythe Ranger District and on the Forest Service holdings in Giles, Montgomery, and possibly parts of Roanoke and Craig Counties in the New Castle District, depending upon the amount of funds becoming available and the amount of pine found. It is possible that the resurvey of the Forest can be completed by June 30, 1948. When the resurvey is completed it will thereafter be necessary to make periodic checks and to do Ribes eradication work throughout the Forest as found necessary. In addition, it will be necessary to keep the records of the work abreast with any acquisition program that may be carried on. An attempt is being made to keep up with such acquisitions through the Rangers, as well as the Supervisor's office. We are pleased to report excellent cooperation in this as well as in all other respects to the program.

The following maps show the status and location of the work.



U.S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
PROGRESS OF BLISTER RUST CONTROL ON THE  
JEFFERSON NATIONAL FOREST  
(HOLSTON AND WYTHE RANGER DISTRICTS)  
VIRGINIA

SCALE IN MILES  
0 5 10 15







LEGEND

— FOREST BOUNDARY

- - - PURCHASE UNIT BOUNDARY

■ AREA WORKED INITIALLY

■ AREA REWORKED

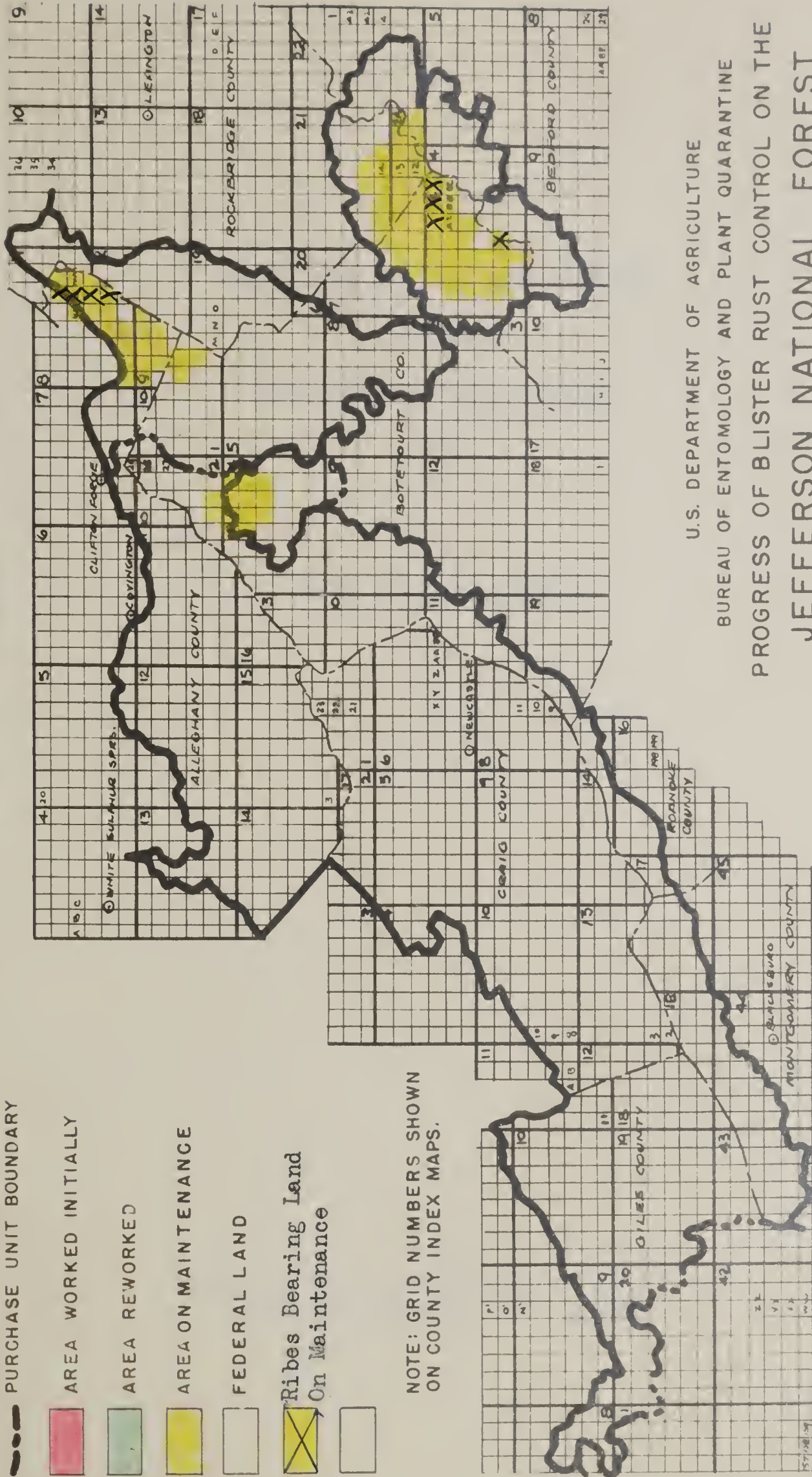
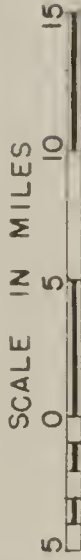
■ AREA ON MAINTENANCE

■ FEDERAL LAND

■ Ribes Bearing Land  
On Maintenance



NOTE: GRID NUMBERS SHOWN  
ON COUNTY INDEX MAPS.



U.S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
PROGRESS OF BLISTER RUST CONTROL ON THE  
JEFFERSON NATIONAL FOREST  
(NEWCASTLE AND GLENWOOD RANGER DISTRICTS)  
VIRGINIA





WHITE PINE BLISTER RUST CONTROL

IN THE

NANTAHALA NATIONAL FOREST

1946

WORK PROJECT - BLR 4

By

Henry E. Yost, Area Leader, Area No. I

Walter A. Stegall, Jr., Agent





### STATUS OF CONTROL

According to the last complete survey, which was made in 1938, there were about 17,500 acres of white pine and a control area of about 33,700 acres on the Nantahala National Forest. No wild Ribes were found near valuable white pine and, therefore, none destroyed. There were, however, 393 cultivated Ribes uprooted which were found near this white pine. The resurvey was begun late in 1945 and as of December 31 the work was completed in Macon County, and in addition, a large part of it was completed in Jackson County. No revised figures concerning the pine and control acreage can be given until the resurvey is completed. In comparing the 1938 figures with the resurvey for Macon County we find a reduction of about 15 per cent in the pine acreage owned by the Forest Service. Present indications are that this reduction will be more than offset by an increase in Jackson County. The 1938 survey showed no white pine on the Nantahala National Forest in Transylvania County, but land recently purchased in the county is known to contain some white pine. The old survey showed very little white pine in Clay, Cherokee, Graham, and Swain Counties. No resurvey work has been done to date in the last three counties. The present indications are that there will probably be more white pine found on this survey than was reported in 1938.

#### TABLE I

Status of Ribes Eradication on the Nantahala National Forest

As Of December 31, 1946

Acres White Pine	Acres Control	Acres Worked			Acres On Maintenance
		First Working	Other Workings	Total	
17,596	33,757	33,322	-	33,322	33,322

\* 33,234 acres resurveyed in 1946. All Ribes-free.

SURVEY DURING 1946

During the year there was mapped, by Forest Service crews on Federal and intermingled private lands, 24,295 acres of white pine with a control area of 34,835 acres. All of this work was confined to Macon and Jackson Counties. The survey was made by what we know as the grid system, which is briefly described as follows: Grid lines at intervals representing one mile run in cardinal directions and are superimposed on the best maps available for the county. The survey work is then carried on using the square mile grid as the working unit. Where necessary these lines are established on the ground and a stem count is made by one chain transects or strips 16 $\frac{1}{2}$  feet wide. The distance between these lines vary from 5 chains in Ribes country to 20 chains in Ribes-free country where pine is generally distributed. This gives from a 5 to 1 $\frac{1}{4}$  per cent coverage. These strip counts are made only after a reconnaissance survey has indicated the likelihood of white pine being present in a particular grid. In some cases these check lines are tied in to base lines which are established along roads rather than on the outer boundaries of the grids.

In the course of the survey in Macon County wild Ribes were found at only three locations; namely, at Cullasaja Falls, on Nantahala River two miles above Beechertown and on Queens Creek in the northwest corner of Macon County. The white pine on Nantahala River and Queens Creek is believed to be of sufficient value to justify the cost of destroying the bushes. In the vicinity of Cullasaja Falls, white pine is of relatively low timber value but the scenic value may make it worth protecting. These bushes were not destroyed at present because of the relatively high cost and hazard due to the fact that many are located on rock cliffs. Also, there is no known blister rust nearer than northwestern North Carolina. When and if the rust moves farther south this area will be reconsidered.

In the course of the survey one location of wild Ribes was found on land recently acquired by the Forest Service on the west bank of the Whitewater River in Jackson County near the South Carolina line. This is the first time wild Ribes have been reported in that part of the State. From our general knowledge of Ribes Ecology it would seem reasonable to suspect their presence at the highest elevations in southern Jackson and Macon Counties, however, no examination was made since these mountain tops are frequently several miles distant from valuable white pines.

RIBES ERADICATION

No Ribes eradication was carried on during the year since none were found near pine of sufficient value to justify the work at this time.



COSTS

During the calendar year there was a total of \$9,526.27 of Forest Service Funds spent on the work. Of this \$8,369.64 was spent for labor and \$556.63 for supervision and operation. The average cost per acre for survey was 14¢. This figure is higher than the average for the Region or the State. It was necessary to spend a considerable amount of time in training the men and much of the country was of such rugged nature that it would be impossible to cover it with any degree of rapidity.

WORK PLANS FOR 1947

It is planned to complete the resurvey in Jackson County on or before the end of February. The survey will then be carried on in Clay, Cherokee, Graham and Swain Counties, which should be completed before June 30. Survey for the recently acquired lands in Transylvania County will probably not be scheduled until after June 30, 1947. We are attempting to make the survey on all the ownerships in a county before leaving it. Any work in Transylvania County should be performed by a crew operating from somewhere in the vicinity of Brevard. This would mean hiring and training a new crew. It is hoped that the work in the western four counties can be carried on for the most part by men now working out of the vicinity of Franklin, thus making it unnecessary to train any new crews.

It is also planned to scout most of the highest mountains in southern Jackson and Macon Counties next spring to determine whether or not wild Ribes are present regardless of their proximity to the pine. We feel that this information could be of value as a guide for timber management and the establishing of plantations in the future.

White pine grows exceptionally well on the Nantahala Forest in the vicinity of Highlands. Although now limited to a relatively small section of the forest there is no reason to doubt that in time the white pine acreage will materially increase. All efforts should be made to encourage this species since much of the land on which it is suitable to grow is free of wild Ribes.





WHITE PINE BLISTER RUST CONTROL  
IN THE  
CHATTahoochee NATIONAL FOREST  
GEORGIA  
1946

WORK PROJECT - BLR 4

By  
Ralph W. Welch, Area Leader, Area II





Page 91

STATUS OF BLISTER RUST CONTROL WORK

AS OF DECEMBER 31, 1946

The blister rust control project within the Chattahoochee National Forest which was begun in 1934 was brought to completion during 1946. The entire Forest, as well as the whole of the white pine belt in north Georgia has now been covered by a unified grid system of survey, and ribes have been destroyed over all areas where eradication was found necessary. Almost the entire control acreage (white pine plus protective zone) is now considered to be on a full maintenance basis requiring only a minimum of work in the future to insure adequate control of the disease.

The following table indicates the status of the work as of the end of the program:

TABLE I

Status As Of December 31, 1946  
Actual Forest Service Ownership

White Pine In Control Area	Control Acreage In Forest	Control Acreage Initially Marked (1)	Control Acreage Re-worked (2)	Acreage In Maintenance
295,902	349,903	349,903	330	349,713

(1) Includes 1,122 acres of Ribes-bearing land, remainder free of ribes.

(2) Ribes-bearing only.

Since the control program has now been completed, a table has been included to show a breakdown of private and Federal ownership within the various counties of the north Georgia white pine belt.

In the initial working of the Chattahoochee National Forest, Ribes eradication was performed on federal land in Fannin, Gilmer, Murray and Union Counties, although second workings were found necessary only in Murray and Union Counties. In the remaining counties within the control

TABLE I

Final Summary Of Georgia Blister Rust Control Work By  
Counties And Ownership: 1934-1946

County	Acres White Pine		Acres Control Area		Ribes Bearing Acreage (Net)			Ribes Destroyed Wild & Cult. (net)	Man- Days Labor	Acreage On Main- tenance
	Federal	Private	Total	Federal	Private	Total	First Working	Second Working	Third Working	
Dawson	3,772	6,140	9,912	3,772	6,364	10,136	-	-	-	68 10,136
Fannin	65,672	52,731	118,403	75,729	67,462	143,191	-	-	-	1,085 143,193
Gilmer	12,192	70,149	82,341	15,027	105,283	120,310	2,489	-	-	1,462 120,310
Habersham	15,202	7,686	22,888	17,412	8,176	25,588	-	-	-	263 25,588
Lumpkin	32,389	21,292	53,681	34,657	22,546	57,203	-	-	-	372 57,203
Murray	24,509	36,318	60,827	31,757	51,473	83,230	1,097	893	390	6,449 83,230
Towne	9,444	2,986	12,430	11,434	3,459	14,893	-	-	-	196 14,893
Union	44,450	14,090	58,540	50,059	15,696	65,755	116	115	-	1,101 65,755
White	27,679	7,808	35,487	34,599	8,905	43,504	-	-	-	478 43,504
Rabun	60,593	29,376	89,969	75,265	34,938	110,203	-	-	-	807 110,203
TOTALS	295,902	248,576	544,478	349,903	324,452	674,355	3,704	1,008	390	11,744 674,015

NOTE: "Net" figures represent what is now considered the active portion of the control area after various adjustments were made on the permanent control records.



area wild Ribes were not found on Federal land, although cultivated bushes were found and destroyed at homesteads throughout the entire control area of the Forest. Some of the Ribes areas originally worked in the Forest were reappraised before second workings were begun and discontinued due to low priority white pine. In future years the possibility of an expansion of white pine to higher elevations where Ribes are more abundant should not be entirely discontinued. If such expansions should occur some amount of Ribes eradication might be needed in order to protect the outer fringes of the pine belt.

TABLE III

Summary of 1946 Survey Work\*  
Chattahoochee National Forest

No. Square Mile Grid Survey	Acres White Pine Surveyed			Acres Control Area Surveyed		
	Federal	Private	Total	Federal	Private	Total
13	4,366	3,954	8,320	4,366	3,954	8,320

\* No Ribes eradication performed during current year. Surveys performed in January and February only, when the entire survey was completed.

TABLE IV

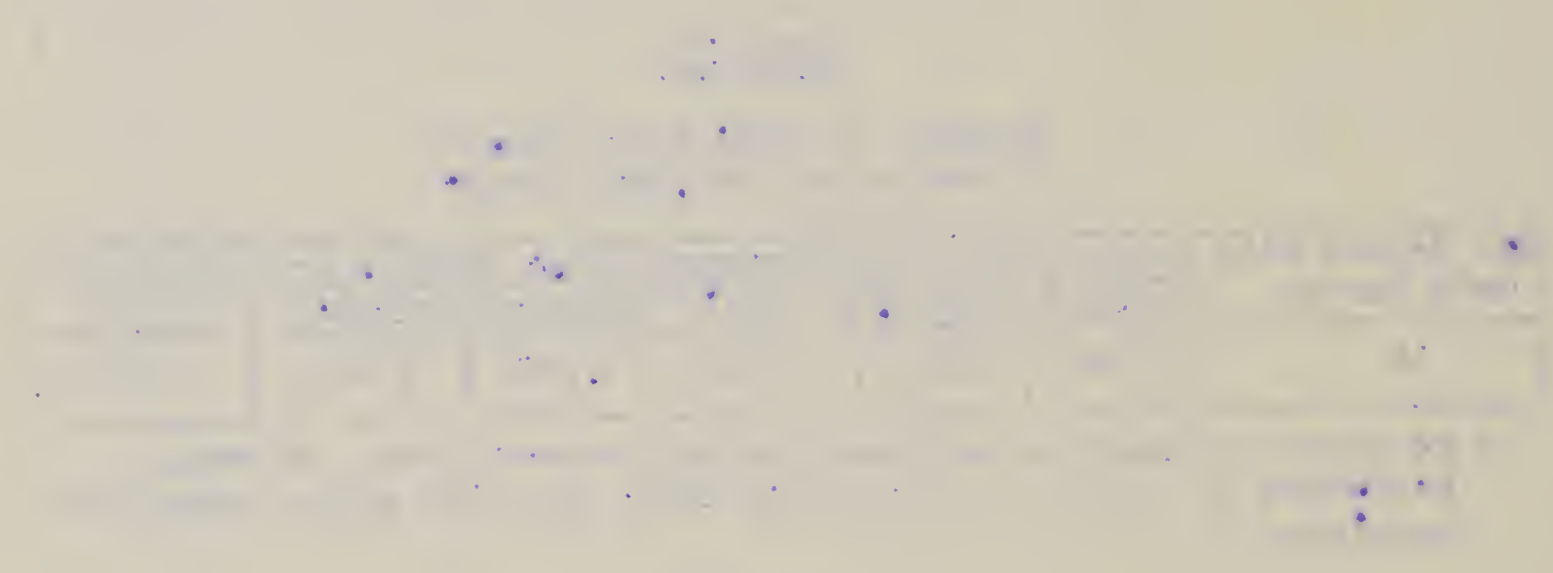
Cost Of Operation, 1946

Agency	Cost Of Labor	Cost of Operation & Supervision	Total Cost	Cost Per Acre Surveyed
Forest Service	\$850.65	\$968.29	\$1,818.94	0.12

#### FUTURE OUTLOOK FOR WHITE PINE

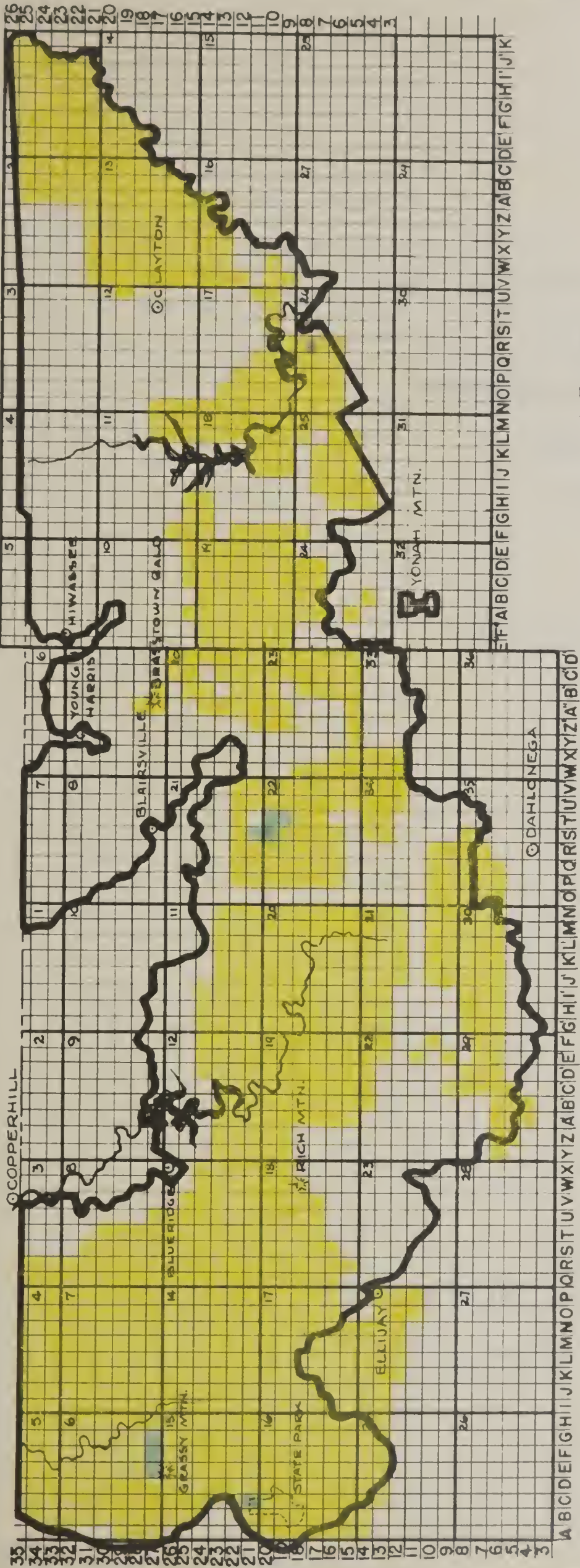
The outlook for future production of white pine in the Chattahoochee National Forest is exceptionally favorable since (1) little damage is involved from the standpoint of outbreaks of blister rust, and since (2) the species makes an extremely good growth rate in this southern latitude of higher annual rainfall. Although the majority of the stands are yet in the reproductive stage and are in mixture with hardwoods, the species has sufficient tolerance to withstand reasonable amounts of competition from other species and will in due time become a major constituent of the mature timber stand if adequate fire protection is afforded.

The first part of the paper is devoted to the study of the properties of the function  $f(x)$  defined by the equation  $f(x) = \sum_{n=0}^{\infty} a_n x^n$ , where  $a_n = \frac{1}{n!}$ . It is shown that  $f(x)$  is an entire function and that  $f(x) = e^x$ . The second part of the paper is devoted to the study of the properties of the function  $g(x)$  defined by the equation  $g(x) = \sum_{n=0}^{\infty} b_n x^n$ , where  $b_n = \frac{1}{n!}$ . It is shown that  $g(x)$  is an entire function and that  $g(x) = e^x$ .



The third part of the paper is devoted to the study of the properties of the function  $h(x)$  defined by the equation  $h(x) = \sum_{n=0}^{\infty} c_n x^n$ , where  $c_n = \frac{1}{n!}$ . It is shown that  $h(x)$  is an entire function and that  $h(x) = e^x$ . The fourth part of the paper is devoted to the study of the properties of the function  $k(x)$  defined by the equation  $k(x) = \sum_{n=0}^{\infty} d_n x^n$ , where  $d_n = \frac{1}{n!}$ . It is shown that  $k(x)$  is an entire function and that  $k(x) = e^x$ .

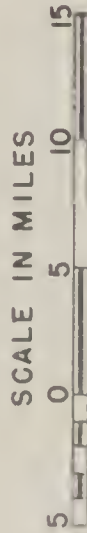




### LEGEND

- FOREST BOUNDARY
- AREA WORKED INITIALLY
- AREA REWORKED
- AREA ON MAINTENANCE
- FEDERAL LAND

U.S. DEPARTMENT OF AGRICULTURE  
 BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
 PROGRESS OF BLISTER RUST CONTROL ON THE  
 CHATTAHOOCHEE NATIONAL FOREST  
 GEORGIA







WHITE PINE BLISTER RUST CONTROL  
IN THE  
CUMBERLAND NATIONAL FOREST  
KENTUCKY  
1946

WORK PROJECT BLR-4

By

Ralph W. Welch, Area Leader, Area II

Glendon E. K Eaton, Field Supervisor





STATUS OF CONTROL WORK AS OF DECEMBER 31, 1946

A white pine blister rust control program was first begun in Kentucky in 1934, but no standardized system of examination or mapping had been adopted at that time. Therefore, the early work was rather general in nature, and was discontinued after the first year of operation. In 1945, a detailed survey system was outlined and placed in effect in Kentucky, and since that time 13,379 acres of white pine and 24,955 acres of control area have been mapped and examined on federal land. Wild Ribes have been destroyed in four separate localities two of which are within the purchase unit boundary of the Cumberland National Forest and the other two of which are within one to three miles of the Forest purchase unit. Although wild Ribes are not commonly found in eastern Kentucky, our systematic surveys have demonstrated their presence in certain localities, and it is possible that additional "pockets" of Ribes may be uncovered by the survey before completion of the program.

White pine makes an excellent growth rate in the rather limited area where it occurs in its natural state in the Cumberland National Forest and young seedlings are becoming established in many sections of the pine belt which were previously taken over completely by hardwoods and yellow pine. The young growth white pine has undoubtedly resulted from better fire protection measures which came about with the acquisition of the land by the Forest Service.

Thus far a total of 5,029 Ribes bushes, the majority of which were wild, have been found and destroyed in Kentucky. These bushes were found in Wolfe and Lee Counties in four localities, covering a total of 95 acres. The following table is given in recapitulation of the work performed on the Cumberland National Forest only, exclusive of work on private and State owned land.

TABLE I

Status As Of December 31, 1946

White Pine In Control Area	Control Acreage In Forest	Control Acreage Initially Worked	Control Acreage Re- worked	Total Pines Des- troyed	Total Man- Days	Percent Initial Work Completed	Acres on Main- tenance
14,478 *	30,565 *	30,565	65	4,872	856	75	30,565

\*These figures are the original estimate of 1934. During the re-survey program now being conducted, 13,379 acres of white pine and 24,955 acres of control area have been mapped and examined. When the survey has been completed, it is probable that the 1934 figures will be exceeded.



BLISTER RUST CONTROL WORK IN 1946

Survey work was performed both in Lee and Wolfe Counties on federal land during 1946. However, the bulk of the survey program during the year was conducted on private land, outside the purchase unit of the Forest. By the end of the year, the majority of the resurvey had been completed over the largest part of the pine belt falling without the purchase unit boundary, and the crews had resumed survey on Forest Service holdings.

TABLE II

Survey, Cumberland National Forest, 1946 (1)

Federal Control Acreage Examined	Federal White Pine Acreage Mapped			Man-Days Survey
	50 & over trees per Acre	Under 50 trees per Acre	Total	
2,257	210	241	451	172

(1) This table lists only Federal land. In addition, 14,383 acres of control and 1,405 acres of white pine were mapped on closely intermingled private land.

Ribes eradication was performed over 65 acres of Ribes bearing land in the Chimney Top Hollow section of Wolfe County. This working was classed as a "mop-up" operation following the second working which was performed rather late in the eradication season of 1945, when 749 Ribes were found and destroyed. The 1946 recoverage of the same area yielded 182 Ribes. It is considered that Ribes growth has been sufficiently suppressed on this particular area as to cause no dangerous hazard from the standpoint of blister rust, even if infection should gain entrance to the area within the next few years. Briefly reviewing the history of this, which is the largest known Ribes area within the Forest, 2,093 Ribes were destroyed here in 1934; 749 were destroyed in 1945; 182 in 1946. Thus, a grand total of 3,024 Ribes bushes in all have been accounted for on the 65 acre tract.



TABLE 111

## Summary of Ribes Eradication, Cumberland National Forest, 1946

Forest District	Initial Acreage Ribes-Free	Control Initial	Acreage Reworked	Worked Total	Ribes Destroyed	Man-Days Used
Red River (South Half)			65*	65	122	9

- \* In addition, approximately 8 000 acres of Forest Service land was classed as Ribes-free (second working) by virtue of observations made by survey crews. Actually, the 65 acres claimed in this table were worked with cooperative funds. Forest Service funds were utilized in conducting the survey only.

STATUS OF BLISTER RUST

Although all Ribes found in 1946 were examined, no evidence of the blister rust disease was found. As yet, the disease has not been discovered in the State, although its presence is known in many of the surrounding States. Upon completion of the present eradication program the entire pine belt within the State will be on a full maintenance basis, and the dangers from spread of the disease will be considerably lessened.

COSTS

As previously stated, the majority of the work performed in Kentucky during the current year was confined to private lands, and for this phase of the work cooperative funds were used. It was not until the final three months of the year that survey work was performed on federal holdings, using Forest Service funds. The table on the following page gives the cost of the Forest Service blister rust project for 1946.

TABLE IV

## Cost of Operation - 1946

Agency	Cost of Labor	Cost of Operation	Total Cost	Cost Per Acre Surveyed
Forest Service	1,171.05	*	1,171.05	.07

\* Supervision and operational costs paid from cooperative funds.

WORK SCHEDULE FOR 1946

A transfer of blister rust funds from the George Washington to the Cumberland National Forest has been recommended and approved, and by making such a transfer it will probably be possible to complete the survey within the Forest by the end of the current fiscal year. Unless an unexpected amount of necessary Ribes eradication work is revealed by the findings of the survey crew, it seems likely that the entire job will be completed by June 30, and that the entire white pine belt will then be on a maintenance basis, requiring but little, if any, additional work within the next decade.





A map is shown on the following page indicating the progress of the survey during the year.

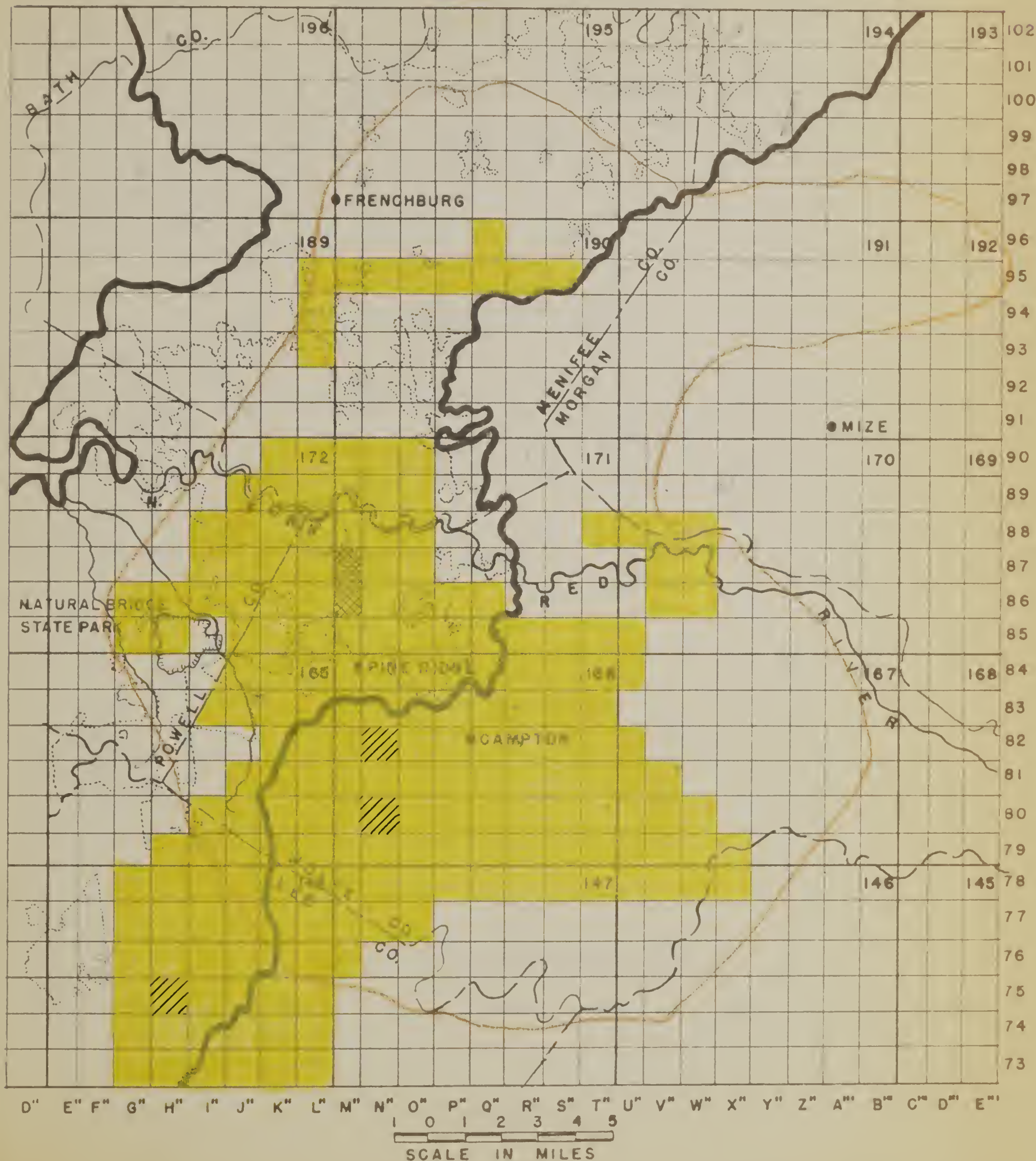


# PROGRESS OF BLISTER RUST CONTROL ON THE CUMBERLAND NATIONAL FOREST—KENTUCKY (SO. CENTRAL RED RIVER DISTRICT)

Page 103

## LEGEND

FOREST BOUNDARY ———— RIBES AREA (Worked 1934, 1945, 1946)   
Ribes AREA WORKED INITIALLY ————  AREA REMAINING TO BE WORKED ————   
AREA REWORKED (On Maintenance)  FEDERAL LAND ————













STATUS OF BLISTER RUST CONTROL WORKAS OF DECEMBER 31, 1946

Initial protection was afforded the native white pine stands within the Monongahela National Forest in 1936 - 1938, at which time 27,865 acres of white pine were stripped and protected by removal of Ribes within a control area (white pine plus 900 foot protective zone) of 77,042 acres. The early work was performed under various emergency programs, such as WPA and CCC. Although some amount of infection was known to exist in the Forest at that time, the disease had not been present long enough to cause material damage to the valuable stands of mixed white pine-hardwood which occurs principally in Pocahontas and Greenbrier Counties in the White Sulphur Ranger District.

A second working was begun in 1943 and as of this date a resurvey has been completed over the entire white pine belt within the Forest. Also, 95 per cent of the Ribes areas have been reworked, and the entire second working program will be completed by June 30, 1947. The new survey reveals that white pine is gaining in importance as a component of the forest stands due to fire and disease control measures which have been successfully applied during the past decade. For example the resurvey indicates an increase of 68 per cent in white pine acreage in the ten year period which elapsed between the first and second surveys. Furthermore, blister rust is definitely being held under control and, through successive workings, the Ribes population has been depleted to the extent that future workings will be necessary on only a small portion of the total control acreage within the next ten year period. An excellent example of the effectiveness of Ribes eradication programs in reducing the number of Ribes (and thereby reducing the danger of blister rust infection) is to be had in Pocahontas County. A total of 664,655 wild Ribes were destroyed upon 96,628 acres of control area of mixed ownership during the initial work program conducted in 1934 to 1937. When the same area was again worked in 1942 to 1946 only 254,046 wild Ribes were destroyed. Due to such reductions, it will only be necessary to make a third coverage of less than 20 per cent of the control acreage, and this operation can probably be delayed until 1952.

TABLE I

Status As Of December 31, 1946

White Pine In Control Area	Control Acreage In Forest	Control Acreage Initially Worked	Control Acreage Re- worked	Per Cent Initial Work Completed	Acres On Maintenance
46,854	89,929	(1) 89,559	(2) 11,221	99	80,299

(1) Includes 12,426 acres of Ribes-bearing land and 77,133 acres of Ribes-free land.

(2) Includes Ribes-bearing land only.

BLISTER RUST CONTROL WORK IN 1946

White pine surveys were conducted in Greenbrier and Pendleton Counties during the year, but eradication measures were confined to the former County. Within the Forest, 8,206 acres of white pine and 26,130 acres of control area were examined and mapped in 1946. In the Potomac Ranger District, 2,043 acres of white pine and 8,065 acres of control area were examined, but very little white pine was found on Federal land. Upon completion of the survey in the entire Forest it is found that 53 per cent of the 46,854 acres of white pine federally owned is in Greenbrier County, 41 per cent in Pocahontas County, 5 per cent in Tucker County and less than 1 per cent in Pendleton County.

TABLE II

White Pine and Control Area Surveyed in 1946

Acres of White Pine Mapped	Acres of Control Area Surveyed	Man-Days Labor	Per Cent of Survey Completed
8,206	26,130	315	100

As previously stated, Ribes eradication was performed in Greenbrier County only. During the year, 2,910 acres of Ribes-bearing land were worked, and a total of 56,244 Ribes were destroyed. In order to complete the entire second working program on the Monongahela National Forest, there remains 9,310 acres of control area, all of which is



inspected to Greenbrier County. It is estimated that the majority of this acreage will be free of Ribes, and it seems entirely probable that the entire program may be completed by June 30, 1947.

The environs of the Parsons Lumber will also be examined during the spring of 1947, and any necessary eradication work will be performed.

TABLE III

Summary of Ribes Eradication in 1946

Forest District	Control Acreage Marked				Ribes Destroyed	Man-Days	Per Cent of Work Completed
	Ribes Free Initial	Ribes-Gearing		Total			
		Initial	Remark	Total			
White Sulphur	1,160	435	2,475	4,070	55,244	642	95

\* Also, 15,330 acres blocked out as free of Ribes by road check and/or survey.

TABLE IV

Summary of Expenditures on Monongahela National Forest in 1946

Labor	Supervision & Operation	Total	Cost Per Acre	
			Eradiation	Survey
\$6,072.40	\$1,786.76	\$7,859.16	\$1.19	\$0.08

Per Acre figures based on effective man-days on Ribes eradication and surveys.

INFECTION CONDITIONS

Blister rust infection has been found on 1929 wood in Tucker County, West Virginia, and it seems probable that the disease first became established on the Forest in that year. However, it did not reach south into the main pine belt of the Forest until about five years later. Protective measures which were applied in 1933-1938 were early enough to prevent the occurrence of heavy damage in Pocahontas and Greenbrier Counties, and successive eradication programs have served to hold the

damage to a minimum throughout the main white pine belt. Occasional "pockets" of infection are to be found here and there, particularly in Pocahontas County, but thus far commercial damage has been averted.

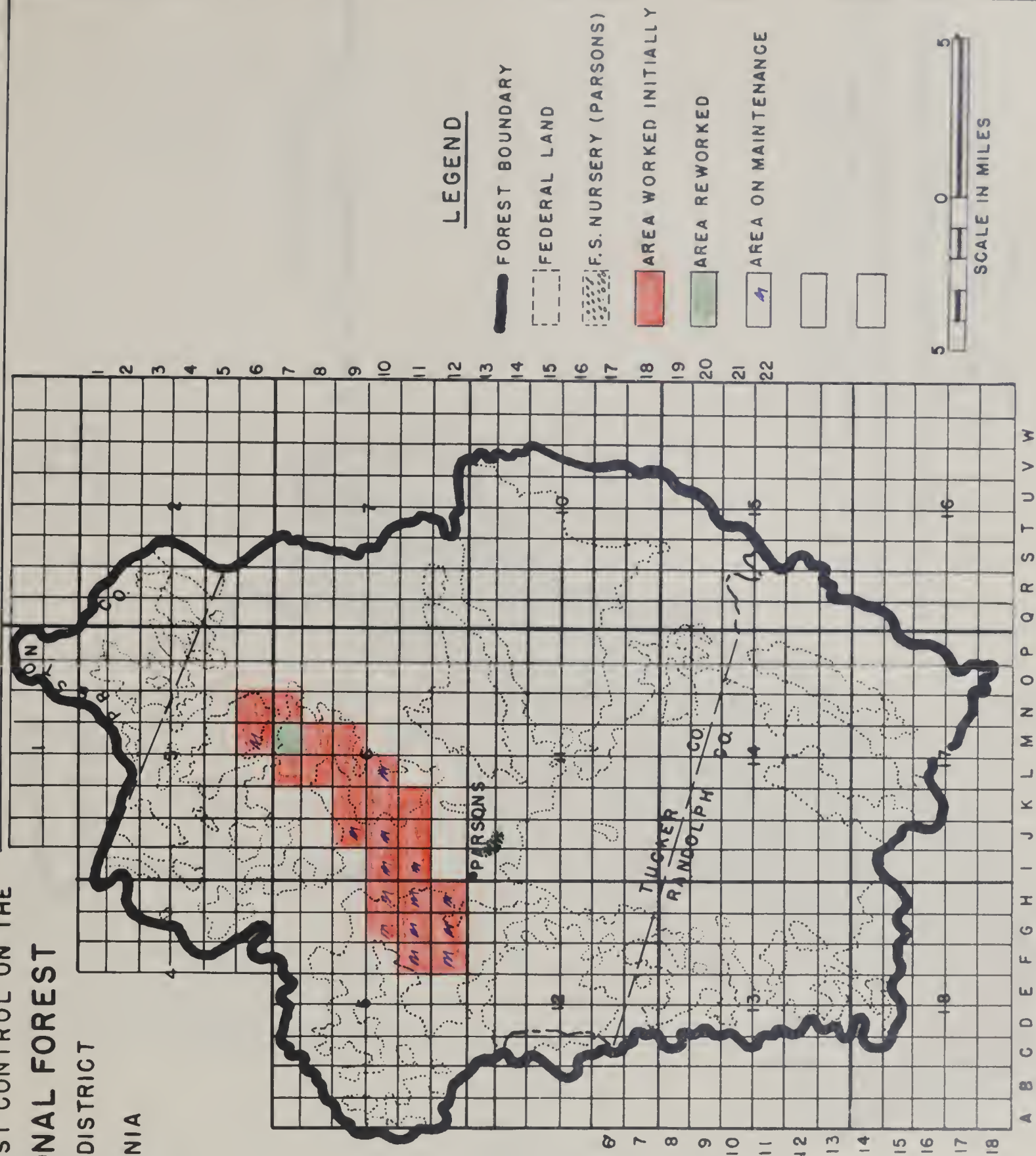
#### RECOMMENDATIONS FOR FUTURE WORK

Since the great majority of control acreage is now on a maintenance basis, future appropriations for conducting the control program on the Monongahela National Forest will be much smaller. Aside from small amounts of funds which may be necessary from time to time to maintain permanent location markers and to perform any work which may be felt necessary in the environs of the Parsons Nursery, future appropriations will not be necessary, at least until after 1950. At this time, it is felt that certain Ribes areas might be re-examined to determine the necessity of future workings.



U. S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

PROGRESS OF BLISTER RUST CONTROL ON THE  
MONONGAHELA NATIONAL FOREST  
CHEAT RANGER DISTRICT  
WEST VIRGINIA



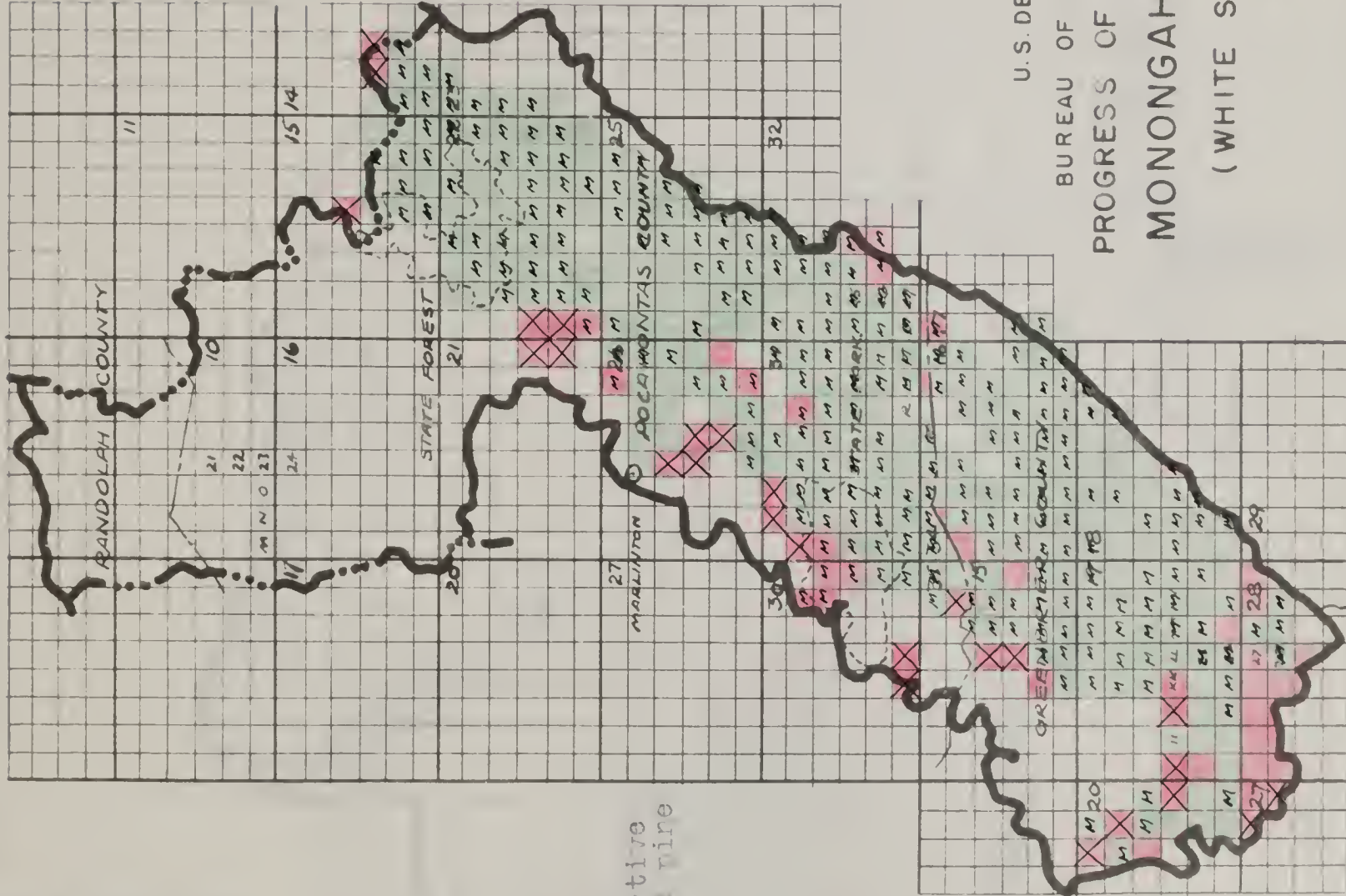




# LEGEND

- FOREST BOUNDARY
- AREA WORKED INITIALLY
- AREA REWORKED
- AREA ON MAINTENANCE
- FEDERAL LAND
- Worked initially, but inactive at present, or until white pine increases.
- Non-pine

NOTE: GRID NUMBERS SHOWN ON COUNTY INDEX MAPS.



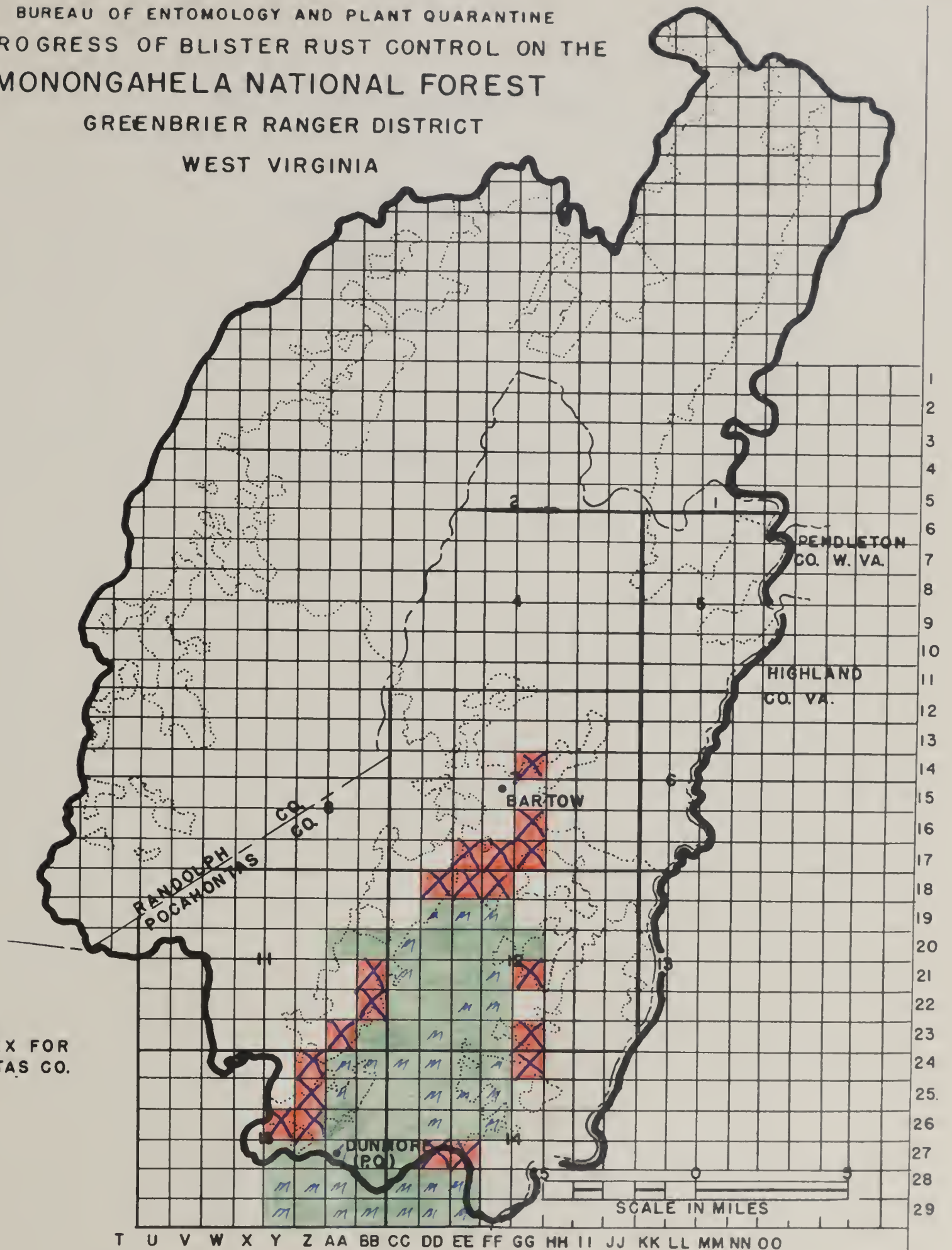
U.S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
PROGRESS OF BLISTER RUST CONTROL ON THE  
MONONGAHELA NATIONAL FOREST  
(WHITE SULPHUR RANGER DISTRICT)  
WEST VIRGINIA





U. S. DEPARTMENT OF AGRICULTURE  
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE  
PROGRESS OF BLISTER RUST CONTROL ON THE  
MONONGAHELA NATIONAL FOREST  
GREENBRIER RANGER DISTRICT  
WEST VIRGINIA

NOTE: GRID INDEX FOR  
POCAHONTAS CO.  
ONLY



LEGEND

— FOREST BOUNDARY  
--- FEDERAL LAND  
■ AREA WORKED INITIALLY

■ AREA REWORKED  
■ AREA ON MAIN- TENANCE



Ineffective





WITH FIRE EXISTENCE RISK CONTROL

IN THE

GUNTER NATIONAL FOREST

SOUTH CAROLINA

1946

WORK PROJECT - BLK 4

By

Ralph W. Welsh - Area Leader, Area II





STATUS OF CONTROL WORK AS OF NOVEMBER 31, 1946

Blighter rust control activities were first begun in South Carolina in 1933. The program continued into 1935, but no additional work was performed until 1938, when the first working of the State was reported as being complete. Observations in the early years were rather general in scope, and no specific method of survey was followed. In most instances, the pine areas were located, spotted on a topographic map and counted rather haphazardly for the presence of Ribes. Often, the estimated acreage figures were considerably out of line with actual survey figures. Stand densities and size classifications did not give a true representation of the stands since these figures were arrived at by optical estimation rather than by percentage sampling.

In order to accurately determine acreage and locations of white pine and to determine the possible need of applying further blight rust control measures within the State of South Carolina, a survey program was begun in 1946. The survey is similar to the one now being conducted throughout the Southern Appalachian Region, involving the square mile grid system and a percentage sampling procedure for mapping white pine. Although the survey has been in operation less than a year, it has already revealed the fact that white pine acreage is rapidly increasing within the native white pine belt of the State. At the end of 1935, only 2,076 acres of white pine had been reported within the Eastern National Forest and only 16,137 acres within the entire State. In conducting the survey now in progress both of these figures have already been exceeded and the survey is far from complete.

Although wild Ribes have not yet been found in South Carolina, either on Federal or private ownership, the possibility of their presence exists, and therefore a comprehensive systematic examination is being conducted.

The following table is offered to indicate the status of the control program to date:

TABLE I

## Status Of Control On Sumter National Forest

As Of December 31, 1946

Acre White Pine In Control Area	Control Acreage Initially Worked	Control Acres Reworked (Ribes-Bearing)	Estimate of Remaining Unworked Acreage	Acreage On Maintenance
(1) 3,580	(2) 8,370	-	5,000	8,370

- (1) Exceeds the previously reported figure (1938) by 1505 acres.
- (2) Exceeds the previously reported figure (1938) by 4,670 acres, with an estimated 5,000 acres yet to survey.

SUMMARY OF ACTIVITIES, 1946

Surveys only were performed during the year, since no ribes were found to necessitate an eradication program. The survey was conducted principally with funds provided for by the Bureau rather than the Forest Service, since the majority of the area surveyed was on private land. Table No. II reviews the work performed by both agencies in 1946, and indicates acreage by ownership.

TABLE II

## Survey Summary, 1946

Agency	Acre White Pine Surveyed		Acreage Control Area		Man-Lays Used Survey
	U. S.	Private	U. S.	Private	
Bureau & Forest Service	3,580	13,212	8,370	31,741	528

The survey was conducted in Oconee County and the majority of the white pine was found along the drainage of the Chattoga River, extending into branch streams on the east side of the Chattoga and carrying as far



month is the 1947-48 period. The majority of the forest ranger funds used during the year is from the Forest Service. The National Wildlife Refuge System is also a major source of funds preparatory to beginning the survey. The following table is used to summarize cost data for the Forest and the Forest Service projects.

### Table III

#### Cost of Operation, 1947

Agency	Cost of Labor	Cost of Operation & Supervision	Total Cost	Cost Per Acre Surveyed
Forest Service	450.87	115.00	565.87	-
Bureau	3,570.46	1,281.76	4,852.22	-
TOTAL	4,021.33	1,396.76	5,418.09	.00

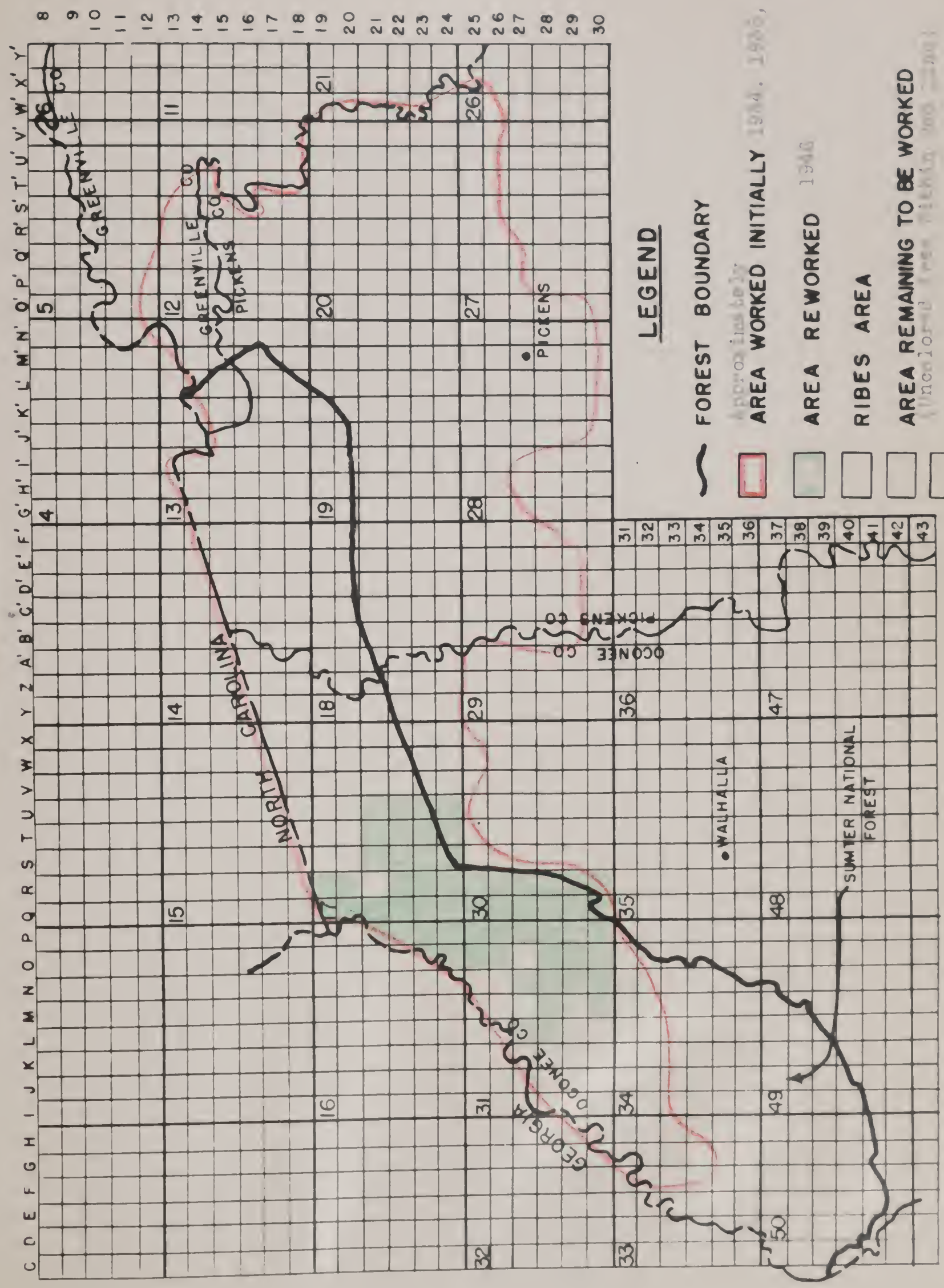
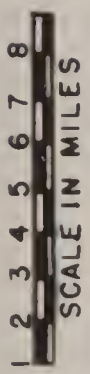
#### WAGE SURVEY FOR 1947

When the survey was begun, it was hoped that all necessary work at the present time would be completed by June 30, 1947. However, the increase in acreage to be covered and the original estimate will probably make it impossible to complete the project in the current fiscal year. Therefore, it is likely that additional funds will be needed to carry the program into the 1948 fiscal year.





PROGRESS OF BLISTER RUST CONTROL ON THE  
SUMTER NATIONAL FOREST — SOUTH CAROLINA



LEGEND

— FOREST BOUNDARY

AREA WORKED INITIALLY 1944

AREA REWORKED 1946

RIBES AREA

AREA REMAINING TO BE WORKED

Approximate to 1/2

AREA WORKED INITIALLY 1944, 1946, 1948

AREA REWORKED 1946

RIBES AREA

AREA REMAINING TO BE WORKED

(Uncolored Area, Pickens, 1948)





PART IV

Work Project BLR-5

Detailed Reports on Blister Rust Control on  
National Park Lands - 1946

By

Henry E. Yost, Area Leader, Area No. I

William V. Zimmer, Assistant Area Leader, Area No. I

Walter A. Stogall, Agent

Robert B. Moore, Park Forester











### STATUS OF CONTROL

The status of the survey of the Blue Ridge Parkway is as follows: Survey completed on the better pine-bearing areas where the Parkway grading has been completed north of Adney Gap. Some survey will probably be necessary in Sections 1-F, 1-L, 1-M, and 1-N after the grading is completed. White pine is known to be present in Section 1-C and pines growing in association with Ribes have been found near the proposed right-of-way in Section 1-N. From Adney Gap to the Virginia-North Carolina line the survey is completed on the recreation areas, such as Rocky Knob Park, where white pine is present. The remainder of the Parkway between Adney Gap and the Virginia-North Carolina line is believed to be free of wild Ribes. No survey of the acreage involved has been made except for that part in Grayson County, Virginia. As the survey on the adjacent private or Forest Service holdings is made the Parkway will be included. It will probably be several years until this is completed.

In North Carolina the survey is completed for Cumberland Knob, Rindt Park, and the Linville Falls area. The survey is completed for the Parkway proper through Surry County, which is roughly Section 2-A through 2-C and for parts of Section 2-D, 2-E, and 2-F, as well as 2-J and part of 2-K. Very little survey was made for these Sections southward of 2-J since not much white pine was found there.

The status of eradication is briefly as follows: All of the pines now considered worth protecting has been marked north of the Peaks of Otter. This is found at Wilkesboro Gap in Section 1-L, Clark's Gap, Irish Gap in Section 1-S and Tye River Gap in Section 1-D. White pine and Ribes are present in the Peaks of Otter area but until this area is fully developed it is unlikely that any Ribes eradication will be done. These Sections from Adney Gap to the Virginia-North Carolina line have been examined on different conditions during the last few years and cultivated bushes destroyed where found. Wild Ribes were found along Rock Castle Creek in Rocky Knob Park which were growing in association with scattered white pine. This area should be re-examined some few years hence for the purpose of observing any increase in pine, but at the present is not considered of sufficient value to justify the eradication work.

In the white pine-producing sections in North Carolina a survey was made some years ago and the Ribes found near white pine were destroyed. In view of the fact that the blister rust has been found in western North Carolina a careful analysis of this work should be made and possibly a re-check of the areas. The following table shows the status of control as of December 1946. This table indicated a complete survey but it included only that part of the Parkway on which at least the grading has been completed.



# STATUS OF BLUFF PARK CONTROL

As of December 31, 1946

State	White Pine In Control Area (Acres)	Control Acreage	Control Acreage Initially Worked	Control Acreage Re- worked	Per Cent Initial Work Completed	Acreage On Main- tenance
Virginia	630	2,561	2,561	-	100	1,544
North Carolina	1,779	3,618	3,618	-	100	3,609
TOTAL	2,409	6,199	6,199	-	100	5,153

## CONTROL WORK IN 1946

During the spring of the year Mr. Frank Dalton made an examination of the Parkway property and a control zone on each side between Adney Gap and the Virginia-North Carolina line. A total of 823 cultivated Ribes were found and destroyed. A survey was made of the Cumberland Knob and Bluff Park areas in North Carolina on which was found 2,012 acres of white pine with a control area of 5,513 acres. In making the above determination the survey crews covered a total of 7,696 acres. The work required 156 man-days. No wild Ribes were found on either area. Cultivated Ribes were found and removed at the Bringer Cabin in Bluff Park. Near the close of the season's work one Ribes bush was found along the Parkway near the Bluff Park maintenance station. The bush was tentatively identified as an escaped cultivated gooseberry. All of the survey work in North Carolina was carried on by the crews employed by the Bureau of Entomology and Plant Quarantine. All of the work was handled on a reimbursement basis except for a short period late in June when the men were paid direct by the Park Service. During the year \$328.25 was spent in Virginia and \$1,012.51 in North Carolina, making a total of \$1,340.76. There remains an unexpended balance of \$1,150.00 which is available from January 1 to June 30, 1947.

## WORK SCHEDULE FOR 1947

A post check should be made during the early spring of the control areas near Tye River Gap in Section 1-D, and Clark's Gap and Irish Gap in Section 1-E. The necessary eradication work cannot be determined until this check is completed, but tentative plans should be made for some eradication work in these areas. If sufficient grading is completed on any parts of the Parkway these sections should be checked for white pine, and if found, the survey of it should be completed. Consideration should be given for employment of a checker to make a house to house resurvey and to destroy any cultivated bushes which may have been missed in the original survey or since appeared between the Virginia-North Carolina line and the end of the graded area north of Blowing Rock. This would cover sections 2-A through 2-E.









### STATUS OF CONTROL

The status of control on the Great Smoky Mountains National Park remains somewhat the same as 1945. The following table shows the status.

TABLE I

Status of Control as of December 31, 1946

State	White Pine In Control Area	Control Acreage In Park	Control Acreage Initially Worked	Control Acreage Re- worked	Per Cent Initial Work Completed	Acreage On Maintenance and Ribes Free
N. Carolina	9,975	22,841	22,841	461	100	22,807
Tennessee	45,522	76,703	76,703	-	100	76,703
TOTAL	55,497	99,549	99,549	461	100	99,500

The overall picture of the blister rust has changed very little during the year except that a detailed study of the infection on white pine in northwestern North Carolina indicated that the rust probably entered this point about 1935. No indication was found that it has spread any marked distance southward, but this should be taken with much reservation since there were many opportunities for the rust to have established itself near or on the Park. The general situation was described in last year's report and the major recommendations are being carried out. To report this briefly the following may be said:

The disease seems definitely to be moving into the wild Ribes-bearing sections of the Southern Appalachian Mountains at the higher elevations. There is no practical way to prevent this since scattered white pines are frequently found growing at high elevations in association with heavy concentrations of wild Ribes. There is ample evidence that the rust can spread, under favorable conditions, from pine to Ribes for a distance of approximately 500 or more miles. This means that theoretically every Ribes bush in the Park is within this range of the known infection on pine. The chances of the bushes becoming infected of course, is greatest where they are growing in heavy concentrations over large areas and the probability of one or two abandoned bushes growing at an old homestead.

organisms infected as insects. Although it could possibly happen, we can therefore expect the rust to become established in the Park in some of these high elevations eventually. When and if this should happen, we would have an immediate source of infection and the abandoned cultivated bushes or scattered wild bushes growing in good pine stands would be a definite hazard. It was decided some time ago to carefully resurvey the pine, especially at its upper limits, to determine just what pine is worth protecting, and then to destroy the bushes. Good progress is being made along this line.

#### BLISTER RUST CONTROL WORK IN 1946

During the year 9,014 wild Ribes were destroyed on 114 acres of control area worked on Mount Sterling. Among these wild Ribes were found many skunk currants. Ninety abandoned cultivated bushes were destroyed in the drainage area of Big and Little Cataloochee Creek. A resurvey was made of 23 square mile grids on the Tennessee side. These grids were distributed over the best pine producing areas and were made for the purpose of checking on the original survey made several years ago. For the areas as a whole, no definite decision has been reached regarding the need for a complete survey but the need for resurvey in the upper limits of the white pine is definitely established. This work is now under way in the headwaters of Abrams Creek and Panther Creek drainage areas. In the course of resurveying these 23 grids, 5,700 acres of pine were mapped on a control area of 10,720 acres.

During the year wild Ribes were found for the first time at the following locations: Russell Field, at an elevation of about 4,300 ft. These Ribes were growing in association with a few scattered white pines. This is the farthest south that wild Ribes have been found in the Park. Skunk currants were found on Mount Sterling, at an elevation of about 5,000 ft. These were also growing near white pine. Another location of Ribes cynosbati were found growing along Big Creek in the vicinity of Crestmont, at an elevation of about 2,000 ft. This, so far as I know, is the lowest wild Ribes location found anywhere in the Park.

#### COSTS

During the year \$4,487.00 was spent on the work. There remains a balance of about \$6,000 available until June 30, 1947.

#### WORK SCHEDULE FOR 1947

The work schedule for 1947 is tentatively as follows: (1) Continue the white pine resurvey in the headwaters of the Abrams Creek drainage until the leaves begin to appear on Ribes at the lowest elevations, which will be late March or early April. (2) Resume the checking of homesites for abandoned



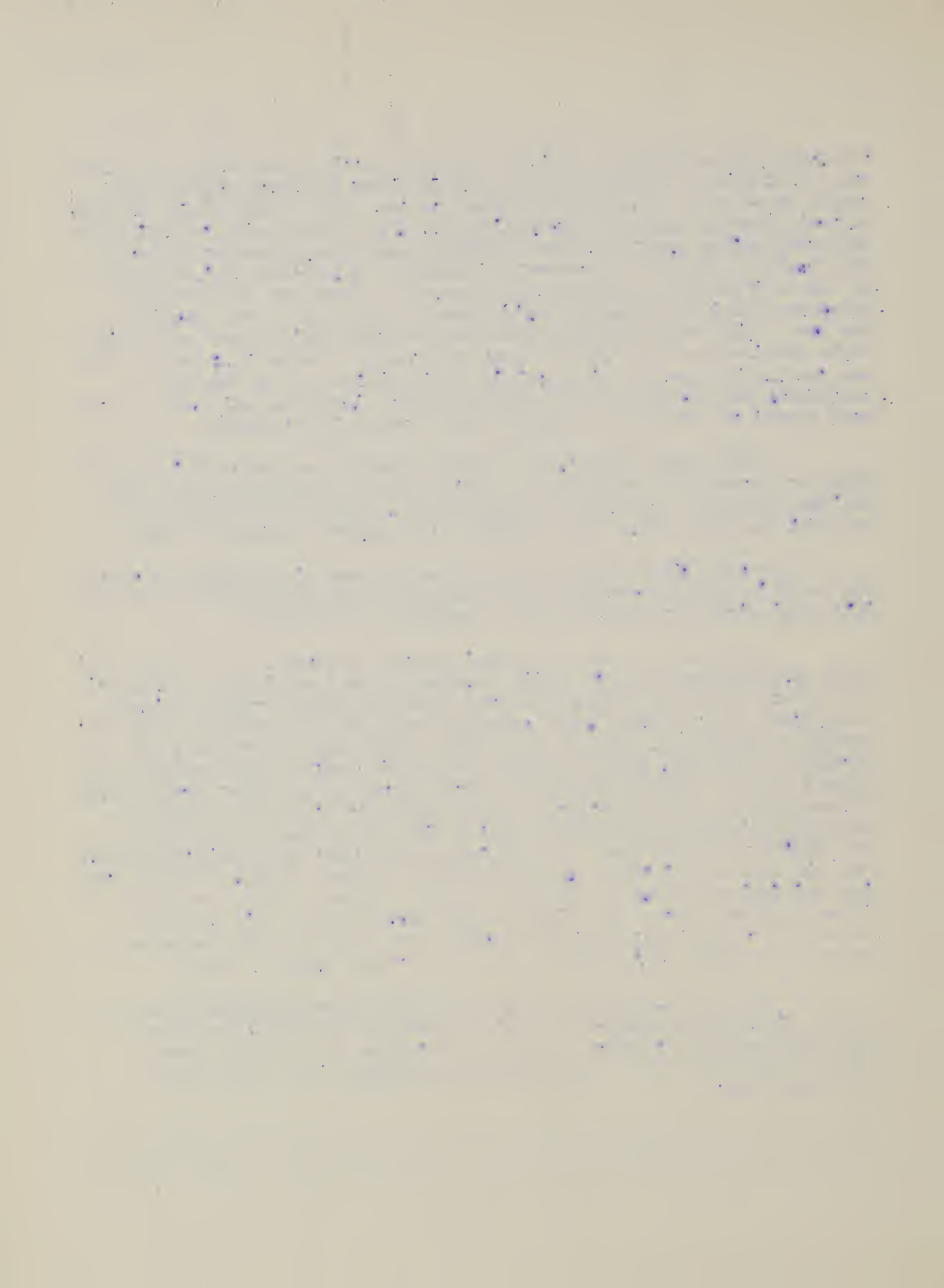
cultivated Ribes beginning probably on Sage Creek, Hazel Creek, or Torrey Creek drainages. A large part of this area was recently acquired and should be scouted within the next year or two. If a longer period of time elapses there is a greater probability of Ribes bushes being consumed by the uncontrolled growth of other plants commonly associated with them. This scouting for and the removal of abandoned cultivated bushes is one of the most important phases of the control work and for the greatest efficiency must be performed during about a two or three week period in the year. The leaves usually appear on the Ribes bushes from two to three weeks earlier than most other associated plants. During this period they can readily be located and uprooted. By beginning at the lowest elevations and suspending this work at higher elevations this two or three week period can perhaps be extended over a month to six weeks.

After other herbaceous and woody plants have developed to a point where work should be suspended on eradication of cultivated Ribes, conditions should be about ideal to resume and complete the eradication job on Mount Sterling. This will probably be completed sometime in June.

During the remainder of the summer a post check should be made of the several old Ribes-bearing areas along Big Catalochee Creek and in the fall, work should be resumed on the resurvey of white pine.

At present we have very good general information of the pine and Ribes distribution but much of the information is incomplete as evidenced by the fact that new locations of wild Ribes are being turned up almost every year. Over a long period of time a work schedule briefly as follows should be carried on: During the spring eradication and scouting for abandoned cultivated Ribes continued, work and rework of the present Ribes control areas. During the summer, post checking of the Ribes worked areas and scouting for rust on Ribes. During the winter continued resurvey especially at the upper limits of white pine and of what we now know as very scattered pine areas. In many cases white pine is reproducing itself even though its seed supply seems relatively scarce. Examples of this were observed during the year on Chestnut Branch, Gregory's Bald, Russell Field, and many other places. The Blister Rust Control work in the Park will probably never be a major problem such as Fire Control or Law Enforcement but it is a problem which will be present for many years to come.

In 1946 all field work was under the direct supervision of Mr. Roy Winley with technical direction furnished by Mr. William Savage, Assistant Regional Forester for the Park Service, Mr. Henry E. York, Blister Rust Area Leader and Mr. Walter A. Stogall, Jr. Blister Rust Field Supervisor.



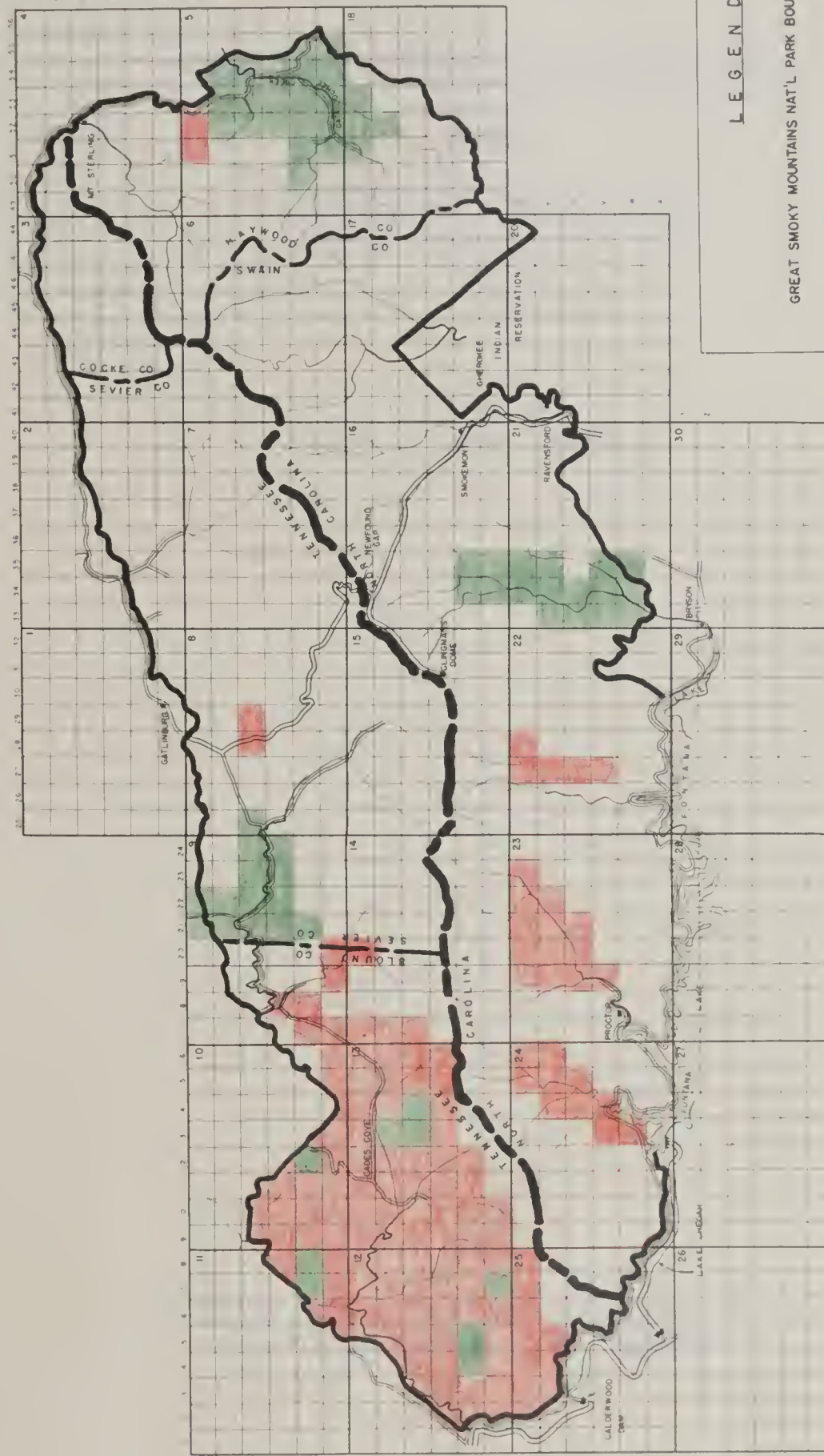


# WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Progress  
(STATUS-PROGRESS- WORK PLAN, ETC.)

GREAT SMOKY MOUNTAINS NAT'L PARK

DATE REPORTED: 12/31/46



## LEGEND

- GREAT SMOKY MOUNTAINS NAT'L PARK BOUNDARY
- B. R. CONTROL BLOCK
- 1st working (1)
- 2nd working

(1) Approximate extent of white pine as per the original survey.





WHITE PINE BLISTERED BARK CONTROL WORK  
IN THE  
SHEWANIAN NATIONAL PARK  
1946

WORK PROJECT - BLB 5

By

Henry E. East, Area Leader, Area No. I  
Robert B. Moore, Park Forester





### STATUS OF CONTROL

Little change occurred in the over-all status as a result of this year's work since it consisted mostly of resurvey and post checking. The resurvey of the old pine areas was begun in 1941 and was continued along with the eradication work and post checking as found necessary. The higher priority areas were worked first. Of the original 59 white pine areas, 58 have been resurveyed. Of these 58, one was combined with another, 18 were abandoned, and 39 retained. It is planned to resurvey this one remaining area early in 1947 after which time the net amount of white pine and control acreage on the Park can be determined. In the meantime we are using the same summary figures as last year.

The work in recent years indicates that on most of the areas good progress is being made. The Ribes comeback and the intensification of the rust have been definitely retarded. At the time this land was placed under the management of the Park Service, some 10 to 15 years ago, much of it consisted of pasture or heavily cut-over woodland. On that part of the Park where most of the control areas were located climatic and soil conditions favored the growth of the wild Ribes. Ecological conditions were in many cases ideal for their growth. Under the Park management timber cutting was discontinued and very effective forest fire control was practiced which resulted in the closing in of the forest canopy. This increased shade in the forest areas has materially aided in the suppression of the Ribes. The fields of some 10 to 15 years ago have now, in most cases, come into brush. Frequently this brush is too small or too thin to materially suppress the Ribes, therefore, considerable amount of Ribes eradication work will be necessary in such areas for several years, but at the end of 10 to 15 more years a forest canopy will, in many cases, be established which will aid considerably in suppression of the bushes.

On the whole the control areas on the Park generally represented some of the most difficult conditions found in the region, but in spite of this the Park Service is getting effective control. The following table gives a resume of the status of the work.

TABLE I

Status of Control

White Pine In Control Area	Control Acreage In The Park	Control Acreage Initially Worked	Control Acreage Re- worked	Per Cent Initial Work Completed	Acreage On Maintenance
3,710	16,570	13,790	5,739	82	1,581

WORK IN 1946

During the year resurvey work was conducted on 606 acres which contained 173 acres of white pine. In addition to this, post checking was conducted on 822 acres. Ribes eradication work was carried on as indicated in the following table:

TABLE IISummary of Ribes Eradication Work

Acres Covered Ribes Free	Ribes-Bearing Acreage Worked *			Ribes Destroyed	Man- Days Used
	Initial	Rework	Total		
1	44	101	146	10,416	36

\* 219 Acres blocked out by post checks as ribes-free.

The above work was performed at Elkwell Ranger Station #52 and Lewis Mountain #6. The work during the year was carried on by the Park checker, Mr. Myers, working under the direction of Mr. Robert Moore, Park Forester. Work during the season was seriously handicapped due to the labor shortage. At no time were more than three individuals employed.

During the year a total of \$1,743.53 was expended. There remains a balance available from January 1 to June 30, 1947 of \$4,139.38. The costs per acre in terms of both dollars and man-days compared favorably with the other work in the Region under similar conditions. Based on the average cost per effective man-day for all blister rust work in Virginia the per acre cost of Ribes eradication on the Park was \$1.17.

WORK SCHEDULE FOR 1947

Before the beginning of eradication season the remaining unmapped pine area, Area No. 30, Ivy Creek, will be resurveyed. Eradication work will be carried on in the following areas:

#6 Lewis Mountain  
#12 Doyle River  
#13 Rocky Bar  
#15 Neighbor Mountain

#26 Rose River  
#31 Simmons Gap  
#55 Gravel Springs



If funds and manpower permit, the following areas will be post checked:

Hawdabill Creek, #22  
Pigmy Mountain, #40

Since the number of areas on which control work will be continued will be reduced, it is planned to revise and simplify our system of keeping records, taking into consideration only the approximate 38 areas to be retained.

A study will be made of the local prevailing wage rates for the purpose of requesting a change in the present wage schedule. The principal reasons for our inability to secure more labor last season was the comparatively low wage rate. An attempt will be made to organize an eradication crew and to get them at work as soon as the Ribes appear. This will be primarily a blister rust control crew but it will also be regarded as a fire control crew to be used if necessary to supplement regular fire control organizations.





WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Progress  
(STATUS-PROGRESS-WORK PLAN, ETC.)

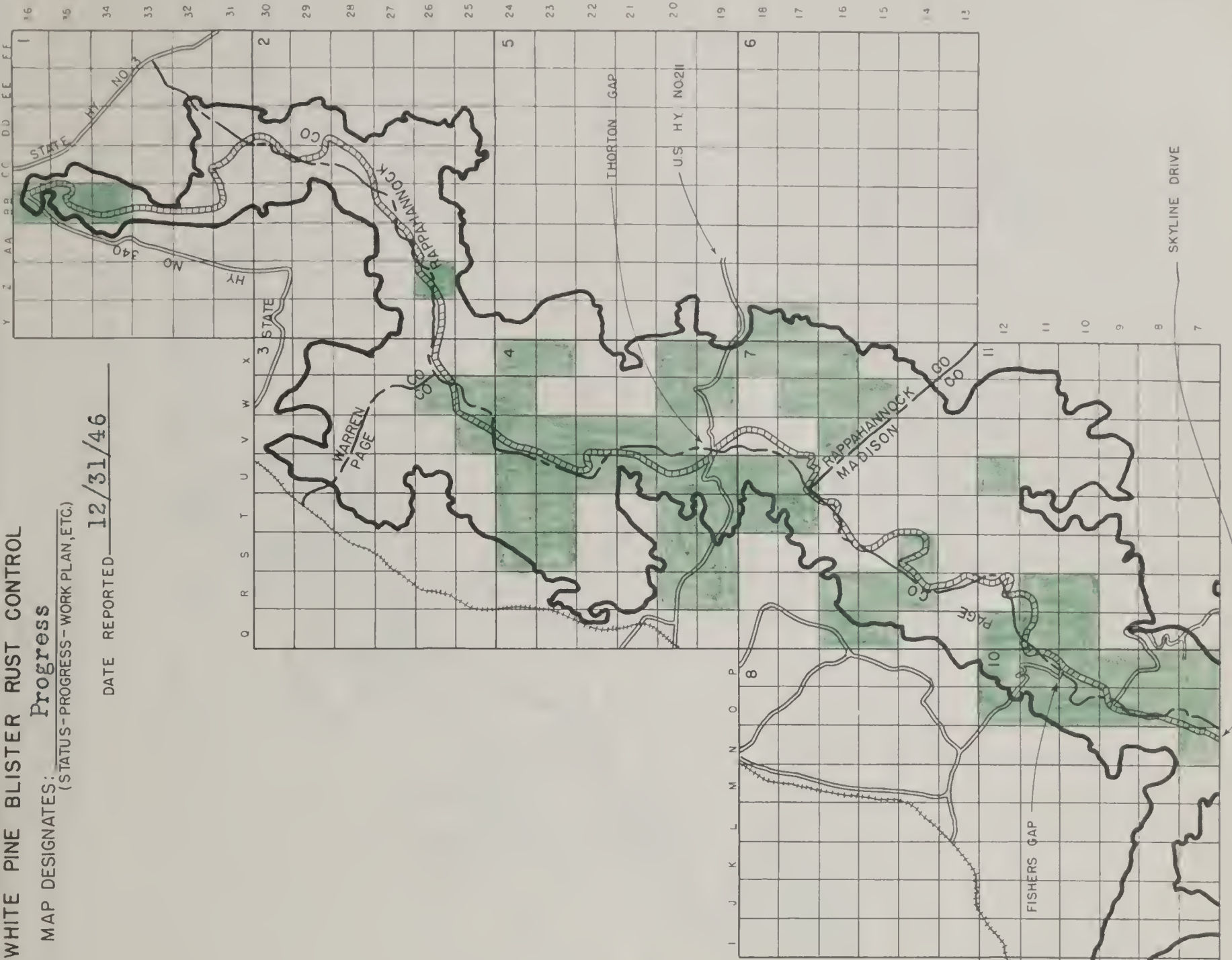
DATE REPORTED 12/31/46

SHENANDOAH NATIONAL PARK  
(NORTH HALF)



LEGEND

- SHENANDOAH NAT'L PARK BOUNDARY—
- SKYLINE DRIVE-----
- B.R. CONTROL BLOCK-----
- 1st working
- 2 or more workings
- 
- 
- 
- 
- 
- 





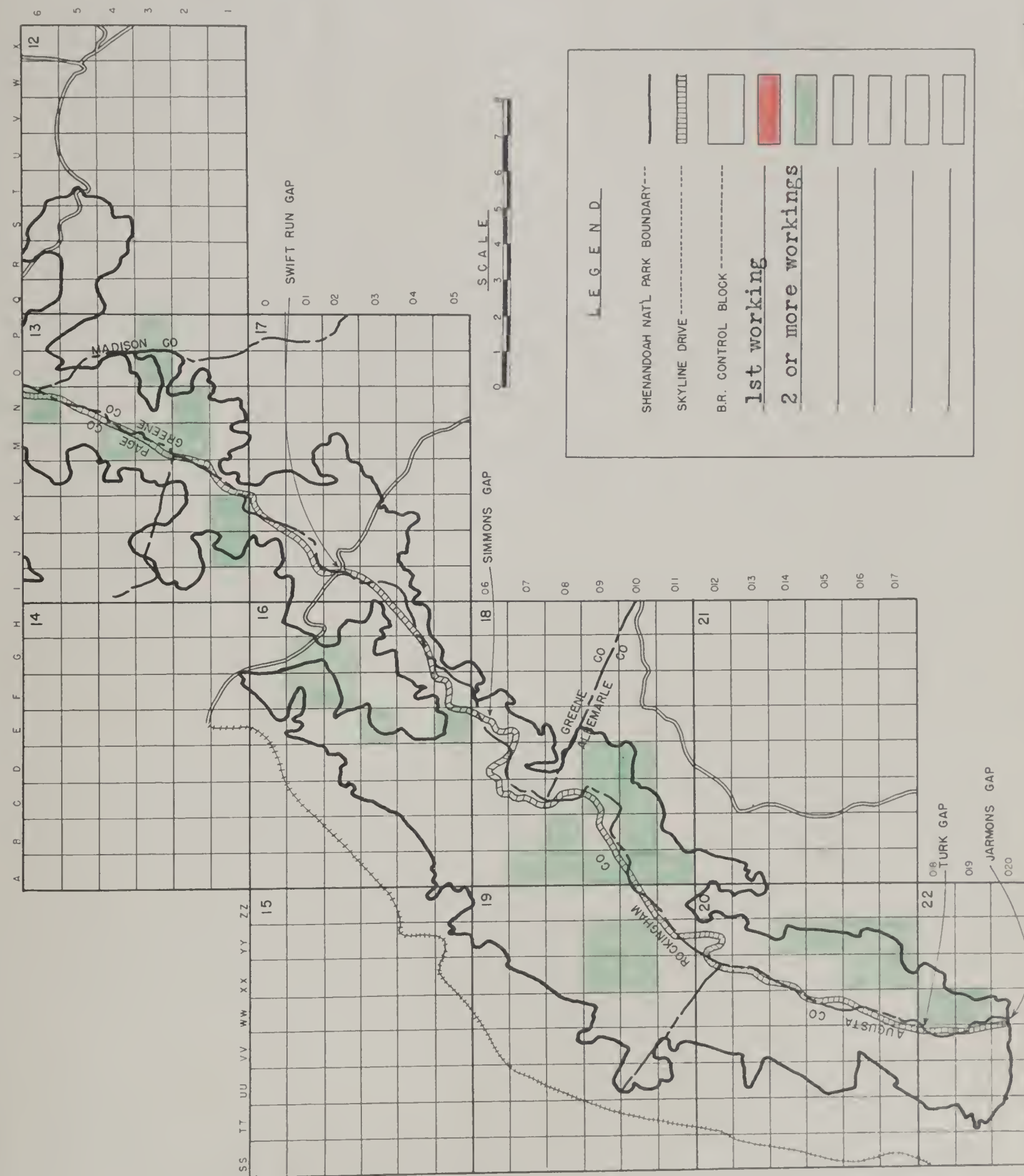


WHITE PINE BLISTER RUST CONTROL

MAP DESIGNATES: Progress  
(STATUS-PROGRESS-WORK PLAN, ETC.)

DATE REPORTED: 12/31/46

SHENANDOAH NATIONAL PARK  
(SOUTH HALF)



Shenandoah Park



























































Working Class	Ownership Class	Acres w. Protection	Acres Harmed	Acres Destroyed	Barbed Wire
Initial	Non-Pub. Public	255	642	2,423	95
	Private	14	185	5,094	40
	Sub-total	269	827	7,517	135
Second	Non-Pub. Public	715	2,223	9,243	215
	Private	636	770	2,703	42
	Sub-total	1,351	2,993	11,946	257
Third	Non-Pub. Public	1,103	2,425	3,834	74
	Private	273	3,931	7,079	110
	Sub-total	1,376	6,356	10,913	184
Grand Total		3,000	10,182	20,376	576

#### Status of Control, December 31, 1946

Ownership Class	Total Control Problem		Not Control Area			
	Not Areas		Acres		Percent	
	Wolves	Control Area	Initially Worked	Not Worked	Initially Worked	% of Area
Forest Service	520	4,341	1,875	1,875	43.2	43.2
Non-Pub. Public	8,540	57,137	41,293	15,844	72.8	82.1
Private	13,661	106,070	40,083	65,987	34.6	27.2
Total	12,721	167,548	83,251	84,297	59.8	52.5

#### Barbed Wire

Lines-free sanitation zones are being maintained around four of the 15 nurseries originally protected. No work was done in 1945 or 1946.

#### Control Area Permits

During 1946 there were 635 requests for vides snipping permits. Of these 631 were granted and 4 rejected.

#### Cultivated black current elimination

The status of this problem in 1946 was the same as at the end of 1944, namely, that 73,117 cultivated black current bushes in 6,106 plantings had been destroyed.

#### Future Control Program

With the establishment of the Area Leader's Office at Columbus, Ohio in June 1946, future control work is planned to catch up with necessary work and keep up with the very large planting program in the state.























## Detailed Narrative Report, 1965

### Preface

As initiated in 1962, the organization of the 1965 report follows the same pattern. It is divided into four main parts, so arranged that separate will be available covering control work on National Forests and Indian Reservations to those respective agencies. The four divisions are listed below.

(1) SLR-1-3. Leadership, Coordination and Technical Direction. This includes summaries, general narrative section, and tables covering all activities. Local control work is included for completeness.

(2) SLR-3-1. Cooperative Blister Rust Control on State and Privately Owned Lands. This includes tables and a discussion by states of work done and status of control on lands in non-federal public and private ownership.

(3) SLR-4. Blister Rust Control Operations on National Forests. This includes tables and discussions of work done and status of control on each of the 11 white pine growing National Forests in this Region.

(4) SLR-7. Blister Rust Control Operations on Indian Reservations. This includes tables and discussions of work done and status of control on each of the 14 Indian reservations producing white pine in this Region.

### SLR-1-3. Leadership, Coordination and Technical Direction of White

### Pine Blister Rust Control, North Central Region

#### Organization

##### Permanent Organization

The permanent organization as of December 31, 1965, is shown in the accompanying chart. Several changes in the organization took place during the year as follows:

Mr. John E. Crocker was transferred from State Leader of Michigan, at Lansing to Asst. Regional Leader at Milwaukee, effective June 20, 1965.

Mr. Glenn A. Allison was promoted from District Leader in Upper Michigan, with headquarters at Sault Ste. Marie, to State Leader at Lansing, Michigan, effective August 25, 1965.





# ORGANIZATIONAL CHART, NORTH DISTRICT, AS OF JANUARY 31, 1966







Indian women were used as river loaders. These crews took pride in keeping good alignment and spacing, and in not missing river bushes. They did not seem to be irritated by mosquitoes, or the briars, both of which are abundant on Indian reservations. An important advantage they possess over their men folk is that there was not the loss of one or several days working time after each pay day.

A crew of young white women under supervision of an older woman did good work on the Chagomahua National Forest.

#### Seasonal Employment

From Table 13 it will be noted that there was an employment during 1946 of approximately 7,012 man-months on blister rust control work in the Nation. That is an average of 217.7 man per month, with the bulk of employment, 61 percent, occurring from May to September, inclusive. While the employment of 2,612 man-months in 1946 represents only a small fraction of employment during the peak of emergency relief programs, it represents the highest employment on Bureau-State, Forest Service and Indian Service Forests since the work was organized on a regional basis in 1941. The average number of persons employed monthly on State and Federal funds since 64.7 in 1942; 71.0 in 1943; 86.0 in 1944; 132.7 in 1945; and 217.7 in 1946.

#### Automotive Equipment

The number of government-owned autos in use, purchased, and disposed of in 1946 is shown by make and year in the accompanying table at the end of 1946, as had 12 passenger cars and 3 1/2 trucks. The years of manufacture were as follows:

1935	1	passenger car	-	-	2	trucks
1937	2	passenger cars	-	-	3	trucks
1939	2	passenger cars	-	-	2 1/2	trucks
1940	3	passenger cars	-	-	3	trucks
1941	2	passenger cars	-	-	0	trucks
<u>Total</u>	<u>10</u>	<u>passenger cars</u>	<u>-</u>	<u>-</u>	<u>3 1/2</u>	<u>trucks</u>

We have no alternative equipment over that 1941. The number of Government automobiles on hand each year is steadily less, as shown following:

#### Automobiles on Hand, January 1, Each Year

Type	1940	1941	1942	1943	1944	1945	1946	1947
Passenger Cars	21	18	13	12	13	12	12	12
Trucks	36	34	37	36	34	34	34	34
<u>Total</u>	<u>77</u>	<u>52</u>	<u>50</u>	<u>48</u>	<u>47</u>	<u>46</u>	<u>46</u>	<u>46</u>











## Activities and Sources of Funds

As in the past several years, the work in 1946 was continued under Memoranda of Agreement drawn up between the responsible State agencies and the Bureau of Entomology and Plant Quarantine. These, with the exception of the one agreement with Iowa, which is shown in the 1946 National Report, are shown in the 1946 National Annual Report, and are not repeated here.

During 1946, work was performed on funds furnished from the following sources:

### 1. State and Private

- a. State Aid (State production control by 505 Federal)
- b. District aid (other services)

### 2. Federal Sliver Pest Investigations

- a. 5101. Laboratory, investigation, and technical direction
- b. 5102. Cooperative sliver pest control on wheat and grain lands. (Financed by State direct aid)
- c. 5103. Sliver pest control on lands of interest to Federal Government
- d. 5104. Sliver pest control on National Forests in Michigan, Minnesota, and Wisconsin
- e. 5107. Sliver pest control on Indian Reservations in Minnesota and Wisconsin. (Financed by Tribal funds on the payment of State protection)

## Yield of the Crop

The weather in 1946 was quite similar to that in 1945. With the exception of Illinois, Indiana, Ohio, southern Michigan and southern Wisconsin, where a rather protracted hot, dry summer period occurred, the weather in 1946 in the North Central Region continued to be favorable for crop development, as in each of the years since 1937. The weather was unusually warm and humid in Wisconsin. This brought out foliage earlier than normal. From April through June a protracted cool period occurred. In early June there were serious frost damage to crops in some areas and refolting crops in some localities. Weather was mild in September and early October, permitting crops to retain their leaves longer than usual, thus extending the period of pest infestation.





Pine infection was initially reported in 1946 from four counties in Iowa: Winnebago, two locations in Adair and Emmet Counties, and one each in Monroe and Crawford Counties. In other parts of the State where pine infection had previously been found, many cankers apparently of 1941, 1942, and 1943 origin were discovered in unprotected stands.

No ribbon infection was reported from new counties. To date, rust on ribbons has been found in 79 and pine infection in 50 of the 83 counties in the State.

#### Minnesota

No ribbon or pine infection was reported in 1946 from new counties. Weather conditions were favorable. Pine infection continued to intensify in unprotected stands in the northeastern part of the State, with many cankers of 1941 to 1943 origin. Ribbon infection was heavy and lesions unusually abundant. To date, rust on ribbons has been reported from 35 and on pines from 15 counties.

#### Ohio

In spite of the rather prolonged summer drought, rust on ribbons was found initially in 1946 in 3 counties in the State as follows: Fitchburg, Stark, and Tuscarawas. Rust on ribbons was light. Only one infection per county was found, and in every case only a single infected S. cyathata branch was discovered.

No pine infection was reported from new counties, and only a few cankers found in some infection centers, chiefly because of past control work.

To date, ribbon infection has been reported from 55 and pine infection from 10 of the 83 counties in the State.

#### Wisconsin

No pine infection was reported from new counties in 1946. Previously, rust on pines had been found in all 71 counties, and on ribbons from 36 counties. Except for the north central part of the State, where a small drought occurred, weather conditions favored rust development. Ribbon infection was heavy with abundant lesion development. Many cankers of 1941 to 1943 origin were observed in unprotected pine stands.

### White Pine

#### Value

In the 1942 report a discussion was given of the historical, aesthetic, and protection values of white pine, and its value as a basis of employment











It is apparent that there is still a great deal of work to be done before the white pine work program is all on a maintenance basis. While seven-tenths of the control area has been initially worked, only 25 percent is on a maintenance basis. Thus, not only is there need for performing initial eradication on approximately 50 percent of the area, but approximately 15 percent of that already initially worked has to be examined and possibly repeated before it is on maintenance.

From the above table it appears that Michigan, with 85 percent of the control area initially worked and 50 percent on maintenance, is the furthest advanced of all the States toward the goal of having control accomplished around all worthwhile stands. While 25 percent of the control area is on maintenance and 15 percent in Ohio are shown as being on maintenance it is probable that a much higher percent can be placed on maintenance in these States when it is possible to adequately examine white pine areas in the northern portions where fires are relatively scarce or absent.

In the northern part of the three Lake States, especially in northeastern Minnesota, where on many sites white pine is the best possible crop to grow, the favorable seasons since 1911 have very markedly increased the germination and growth of white pine reproduction. This increase in the number of young white pine trees has not only extended the known limits of white pine areas but has also materially tended to increase the stocking of these areas in existing white pine stands.

Unfortunately, however, the conditions favorable to white pine reproduction have also been favorable to rust spread and development. The net result is that in unworked stands the rust is killing young white pines at a greater rate than they are coming in through natural regeneration.

During the war years when funds for blister rust control and labor were scarce, our only sound approach to the problem has been to protect the very areas of the crop and to make our funds go as far as possible in saving the greatest number of white pine trees. In so doing, however, it is inevitable that millions of young white pines on tens of thousands of acres will be killed. It is hoped that funds and labor will be made available so that this destruction of young white pines can be greatly lessened if not halted, and that white pine sites may be permanently cleared of rust, thus allowing future generations of white pine to grow undamaged in blister rust invaded areas.

As blister rust control workers go out just farther into areas where the existing white pine crop. We must remember that the presence of rust on a good white pine site destroys not only the existing stand but prevents indefinitely the formation of future white pine forests. Thousands of acres in the northern part of the three Lake States will be best utilized if they were in white pine production. Therefore, as funds and labor permit, the propagation of such white pine sites must be taken into consideration in blister rust control plans.

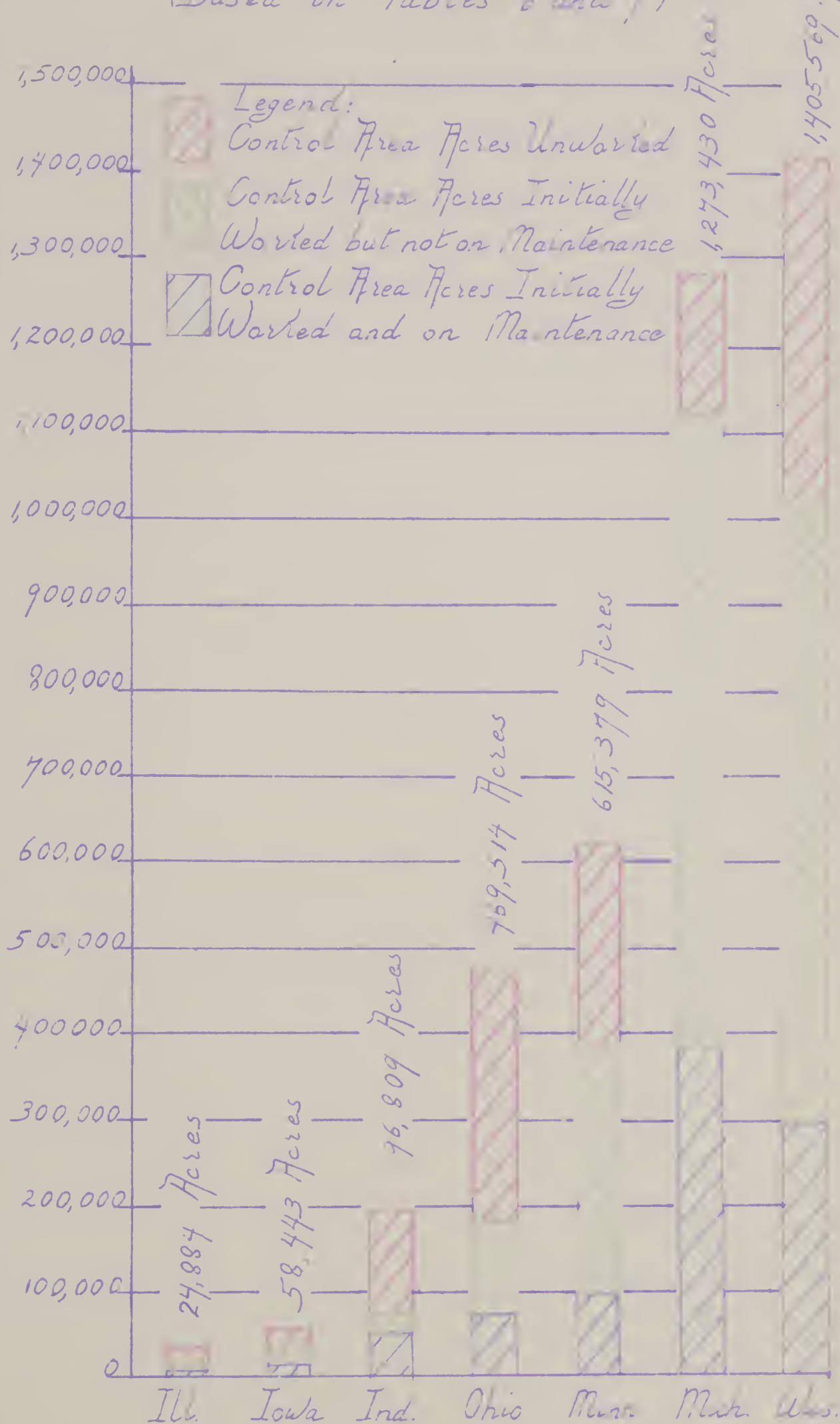




CONFIDENTIAL

State of Control by States & Territories  
North Central Region  
To December 31, 1946  
(Based on Tables 6 and 7)

Acres in Control Area







3,800,000

Status of Control of Denimay District

All States, North Central Region

Inception to December 31, 1946

(Based on Tables 6 and 7)

3,600,000

3,400,000

3,200,000

3,000,000

2,800,000

2,600,000

2,400,000

2,200,000

2,000,000

1,800,000

1,600,000

1,400,000

1,200,000

1,000,000

800,000

600,000

400,000

200,000

Ares in Control Area



Acres Unworked



Acres Initially Worked but not on Maintenance



Acres Initially Worked and on Maintenance

Legend:

2,732,516 Acres

4,074,000 Acres

796,899 Acres

400,584 Acres

113,909 Acres

Indian Service

Forest Service

Department of the Interior

Public Lands

Other





# CHART 3

Fiber Investigated per Tola by Status and Ownership Classes, All Alarings  
Inception to December 31 1945 - North Central Region  
(Based on Table 8)

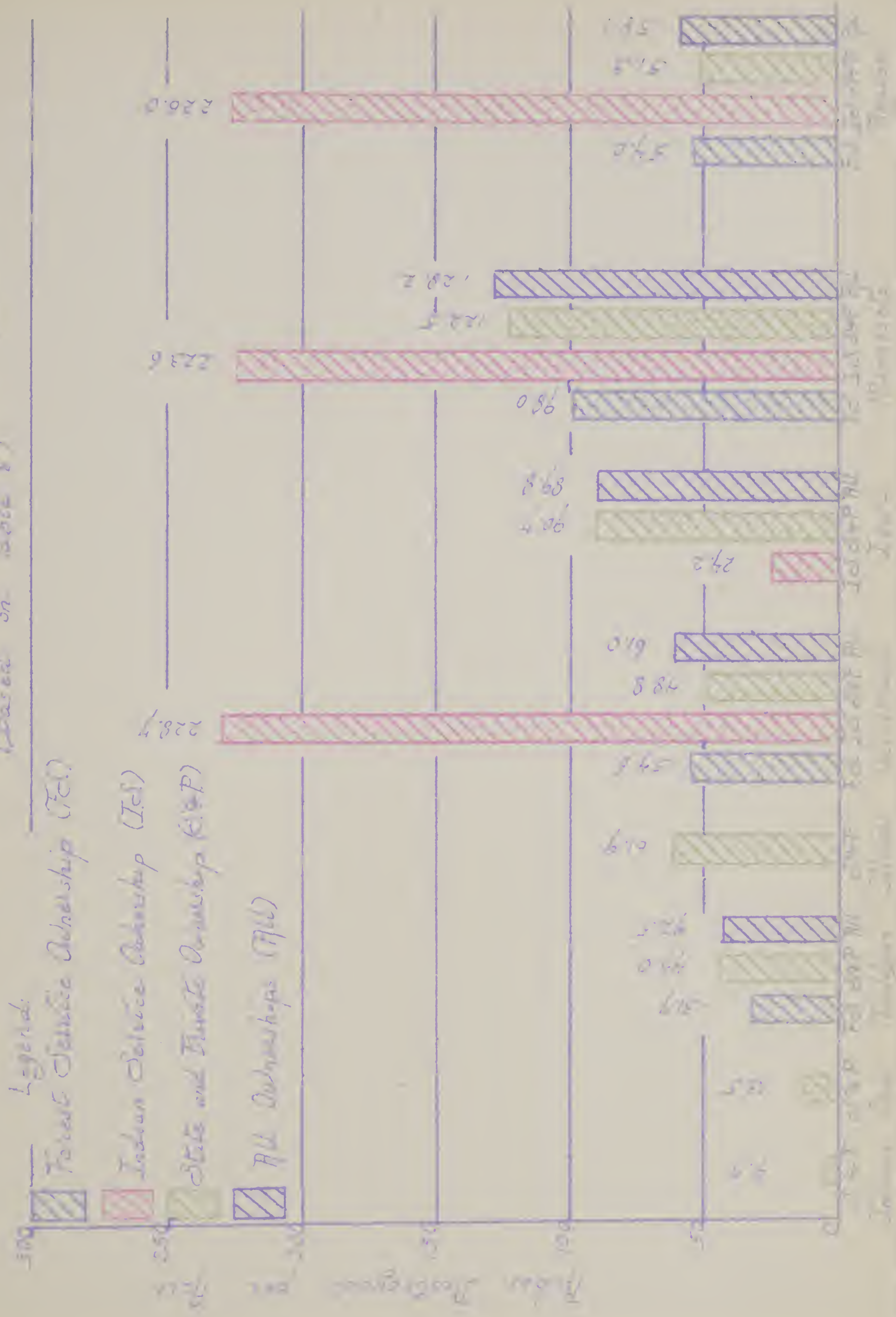










































Table 2. Treatment in 1965 of 2044 Spruce in 1965 (continued)

Date 1965	Location	Air Temp. above	Wind mi- nutes	Treatment
Aug. 25	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	70°F	25	See 1-510 1000 ppm, applied 2 gals. per acre (a total 50 gals.)
Aug. 25	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	70°F	25	See 1-510 3000 ppm, applied 2 gals. per acre (a total 50 gals.)
Aug. 25	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	70°F	25	See 1-510 1000 ppm, applied 2 gals. per acre (a total 50 gals.)
Aug. 25	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	70°F	25	See 1-510 3000 ppm, applied 2 gals. per acre (a total 50 gals.)
Aug. 29	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	68°F	25	See 1-510 at rate of 2 gal. to 10 gals. water, applied 2 gals. per acre.
Aug. 30	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	58°F	10	See 1-510 at rate of 2 gal. to 10 gals. water (a total 50 gals.)
Aug. 30	Grand Portage Indian Reservation, T. 5.3, R. 6E, Sec. 29, 30/31	58°F	10	See 1-510 at rate of 2 gal. to 10 gals. water (a total 50 gals.)
Subtotal - Grand Portage			150 minutes	
Total Treatment			150 minutes	
Grand Total Treatment, 1965			150 minutes	

\*Treatments applied to various species of trees in the Grand Portage Region. To determine the effectiveness of various concentrations and dosages of 2,4-Dichlorophenoxyacetic acid formulations may be summarized as follows:

#### \*I. Treatment of Susceptible Species of Trees

- (1) Illinois on E. americana - 50 minutes
- (2) Minnesota on E. americana
  - (a) Grand Portage Indian Reservation - 50 minutes
  - (b) Grand Portage Indian Reservation - 50 minutes

Total Number of Minutes of Susceptible Trees Treated: 150 minutes

#### \*II. Treatment of Resistant Species of Trees

Minnesota:

- (1) Grand Portage Indian Reservation - 13 minutes
- (2) Grand Portage Indian Reservation - 13 minutes

Total Number of Minutes of Resistant Trees Treated: 26













the forest work. The emphasis is placed on the forest, etc. In the  
policy of forest management, the government has been successful in  
the forest work. The forest work is the main part of the forest  
management on the part of the forest work.

In the forest, the government has been successful in the forest  
work. The government has been successful in the forest work. The  
government has been successful in the forest work. The government  
has been successful in the forest work. The government has been  
successful in the forest work. The government has been successful  
in the forest work. The government has been successful in the forest  
work. The government has been successful in the forest work.

### Policy of Forest

The forest work is the main part of the forest management. The  
government has been successful in the forest work. The government  
has been successful in the forest work. The government has been  
successful in the forest work. The government has been successful  
in the forest work. The government has been successful in the forest  
work. The government has been successful in the forest work.

The forest work is the main part of the forest management. The  
government has been successful in the forest work. The government  
has been successful in the forest work. The government has been  
successful in the forest work. The government has been successful  
in the forest work. The government has been successful in the forest  
work. The government has been successful in the forest work.

The forest work is the main part of the forest management. The  
government has been successful in the forest work. The government  
has been successful in the forest work. The government has been  
successful in the forest work. The government has been successful  
in the forest work. The government has been successful in the forest  
work. The government has been successful in the forest work.

































Table 4. Costs of Control of Insects and Plant Diseases, 1941-5.  
North Central Division, 1941 to 1945

State	Period of Time	State and Private Cooperation Direct Aid	Bureau Cooperation via State & Private State & Private	Bureau 5105 Intermingled Leads	Total Total
Illinois	1941-1945	\$19,235.72	\$12,696.22	0	\$31,931.94
	1946	4,070.82	5,474.12	-	9,544.94
	1941-1946	23,306.54	18,170.34	-	41,476.88
Indiana	1941-1945	1,353.12	985.74	-	2,338.86
	1946	317.12	2,354.76	-	2,671.88
	1941-1946	1,670.24	3,340.50	-	5,010.74
Iowa	1941-1945	11,304.72	12,217.71	-	23,522.43
	1946	1,090.32	29,776.77	-	30,867.09
	1941-1946	12,395.04	41,994.48	-	54,389.52
Missouri	1941-1945	5,000.00	4,776.50	-	9,776.50
	1946	114.18	7,670.17	-	7,784.35
	1941-1946	5,114.18	12,446.67	-	17,560.85
Nebraska	1941-1945	51,604.63	27,271.22	2,893.62	81,769.47
	1946	11,368.26	68,388.84	6,970.33	86,727.43
	1941-1946	62,972.89	95,660.06	9,863.95	168,496.90
Minnesota	1941-1945	22,051.16	25,385.43	-	47,436.59
	1946	9,381.62	34,759.37	10,237.83	54,378.82
	1941-1946	31,432.78	60,144.80	20,501.68	112,079.26
Missouri	1941-1945	23,071.52	43,386.41	-	66,457.93
	1946	18,127.19	53,117.17	3,907.84	75,152.20
	1941-1946	41,198.71	96,503.58	3,907.84	141,610.13
Oregon	1941-1945	135,077.65	135,147.79	2,883.62	273,109.06
	1946	45,800.47	170,037.94	27,261.65	243,099.06
	1941-1946	180,878.12	305,185.73	30,145.27	516,209.12























The situation with regard to spread of balsam poplar on the forest remained practically unchanged in 1946. Most of the forest has been reported as quite generally distributed. Previously, pine infection had been found at two points near the Salmon Ranger Station and at three points near Oakes in the southeast corner of the forest. In 1946 the pine was found, principally originating in 1944, were found near Rogers Dam in Harney County. The pine was destroyed.

Only a small amount of work is recommended for 1947. No initial work is needed except around any white pine plantations which may be established in 1947. Depending on results of post check, more work may be recommended for 1947. Through an excellent working arrangement between the Forest Supervisor and the Elmer Rust Central District leader, the latter examines prospective white pine planting sites prior to planting in order to encourage the planting of white pine on sites where other trees are abundant.

#### Burns National Forest - Michigan

The present control problem consists of 567 acres of natural pine, 1,250 acres of planted pine, within a total control area of 4,577 acres. All this has been initially worked, and 65 percent of it is on maintenance. In 1946 there were 2,530 trees removed from 798 acres of stand, and 182 acres of third workings at a total loss of 19 man-days. This small amount of work was done by a Bureau crew paid on 310h funds.

Most of the forest was generally distributed in 1946. Additional pine infection was found near Mio in Oscoda County in two places; one of about two acres is well established, and the other is of recent origin. A few places were found infected in a plantation in Alcona County.

Very little control work is recommended for 1947, other than the obtaining of areas to be planted to white pine. The same excellent working agreement described for the Marquette is in effect on the Burns.

#### Marquette National Forest - Michigan

About equal acreage of planted and natural white pine make up the 10,734 acres listed for protection with a control area of 25,215 acres. There remain approximately 155 acres of natural pine with a control area of 685 acres to be initially worked. About 36 percent of the pine acreage, chiefly in the northern third of the forest, is on a maintenance basis.

As noted in text table 5, both initial and rework were performed in 1946. Initial work was done on 1,225 acres; second workings on 2,678 acres; and third workings on 660 acres. From the total 4,563 acres worked, 10,287 trees were destroyed at a cost of 670 man-days. Silviculture work was done by a crew of ten to fifteen laborers, mostly high school boys from the vicinity of Brimley.

Most of the forest is generally prevalent on the forest. Pine infection has been found at three localities: south of Marquette, northwest of Brimley, and southwest of Escanaba. While additional pine infections were found in 1946, there was no increase in the known range of the pest on the forest.





















































































There are now 1,442 acres of mature white pine with a residual stand of 3,558 acres. This was all been initially worked, and 1,623 acres of white pine as of present is on maintenance.

In 1943 two acres of Indian spruce under Pinyon Gray did second working on 369 acres and third working on 90 acres. First started on July 13 and terminated on September 21. From the total of 459 acres, 192,444 ribs were removed at a cost of 577 man-days. Working on this acreage showed an average of 6.6 bushes and 18.1 F.L.B. per acre after eradication. There were 349 acres with ribs at the rate of less than 10, and 110 acres showing more than 25 feet of live stem after eradication. The poor work was due late in the season after defoliation had made pines difficult to see.

Rib infection was first found in 1934, and one infected pine found in 1939. Subsequent search for pine infection led there to be light. Early ribs eradication efforts were valuable in preventing the rust from building up and doing damage.

Plans for 1947 call for the removal of 2,723 acres to maintain protection of 2,146 acres of white pine, at an estimated cost of 533 man-days. Much of this acreage is relatively light in ribs, and it is hoped the work can be done by well trained scout crews.

#### Red Lake Indian Reservation - Minnesota

This reservation contains the largest amount of white pine of all the reservations located in Minnesota. There are 12,685 acres of white pine listed as worth protecting of which all but 92 acres have been given initial protection. While only 1,120 acres of white pine are shown as being on maintenance, it is probable that surveys would classify additional acres of white pine in this category.

In 1943 the first control work since 1942 was done. It initially treated 160 acres of white pine, 109,157 ribs were removed from 212 acres at a cost of 591 man-days. In third working 168 acres were removed from 2,530 acres at a cost of 51 man-days. Ribs eradication started on July 31 using 15 Indian men from Pongash Village, work lasted until September 15.

Results of checking after eradication work on 1,342 acres was most encouraging. Ribs were found at the per acre rate of 0.1 bushes and 0.7 F.L.B. All of the acreage worked showed less than 15 F.L.B. per acre.

The main body of white pine lies on the peninsula projecting between Quiver and Lower Red Lakes. A considerable number of smaller areas, many of which are on a white pine base, are found immediately south of Lower Red Lake. Silver rust was first reported on both pine and ribs in the summer of 1933. Fortunately, initial local control work was performed that year and in subsequent years, thus forestalling damage to white pine which could have occurred had they not been protected in time.

Logging in 1944 and 1945 has disturbed conditions. There is need for a thorough post-check of the area to determine the abundance of young white pine, the presence of ribs and the need for removal. Plans for 1947 call for post-check crews and scout crews, as well as the working of 5,005 acres at a cost of 2,110 man-days.

























Test Table 10: Analysis of Chemistry After Glass Insulation on Filled Resin/Polymer, North Island, Region, 1988.

Table Insulation	Dr. Area	Large Boxed	Chemical After Resin/Polymer			Classification of Resin/Polymer on basis of Glass Filler, per 1000 Litre After Resin/Polymer		
			Early Score	Glass Filler	Glass Filler	Glass Filler	Glass Filler	Glass Filler
Grand Portage, 1988	1	255	6.18	37	53.5	2.3	2.5	275
North Lake, 1988	1	67	2.80	6	24.6	2.1	0.7	69
Verdillona, 1988	2	186	1.20	15	44.2	3.3	9.4	186
North Lake, 1988	3	459	10.48	64	130.0	6.4	18.1	348
North Lake, 1988	5	2,512	95.74	6	28.0	0.1	0.5	1,512
North Lake, 1988	5	2,202	14.20	188	618.5	6.4	14.0	2,080
North Lake, 1988	15	3,727	37.50	92	160.0	2.4	4.5	5,637
North Lake, 1988	6	2,189	13.60	72	115.0	5.2	6.5	2,189
North Lake, 1988	9	3,890	38.50	158	404.0	3.8	10.2	5,890
North Lake, 1988	11	4,157	218.25	70	1,079.0	7.4	7.4	4,041

















# Summary

Summary of Indian Affairs  
 Indian Affairs  
 Indian Affairs  
 In December 31, 1946  
 (Based on Total 1946)

## Legend

- Control from Police Department
- Control from Police Department but not on Reimbursement
- Control from Police Department and on Reimbursement

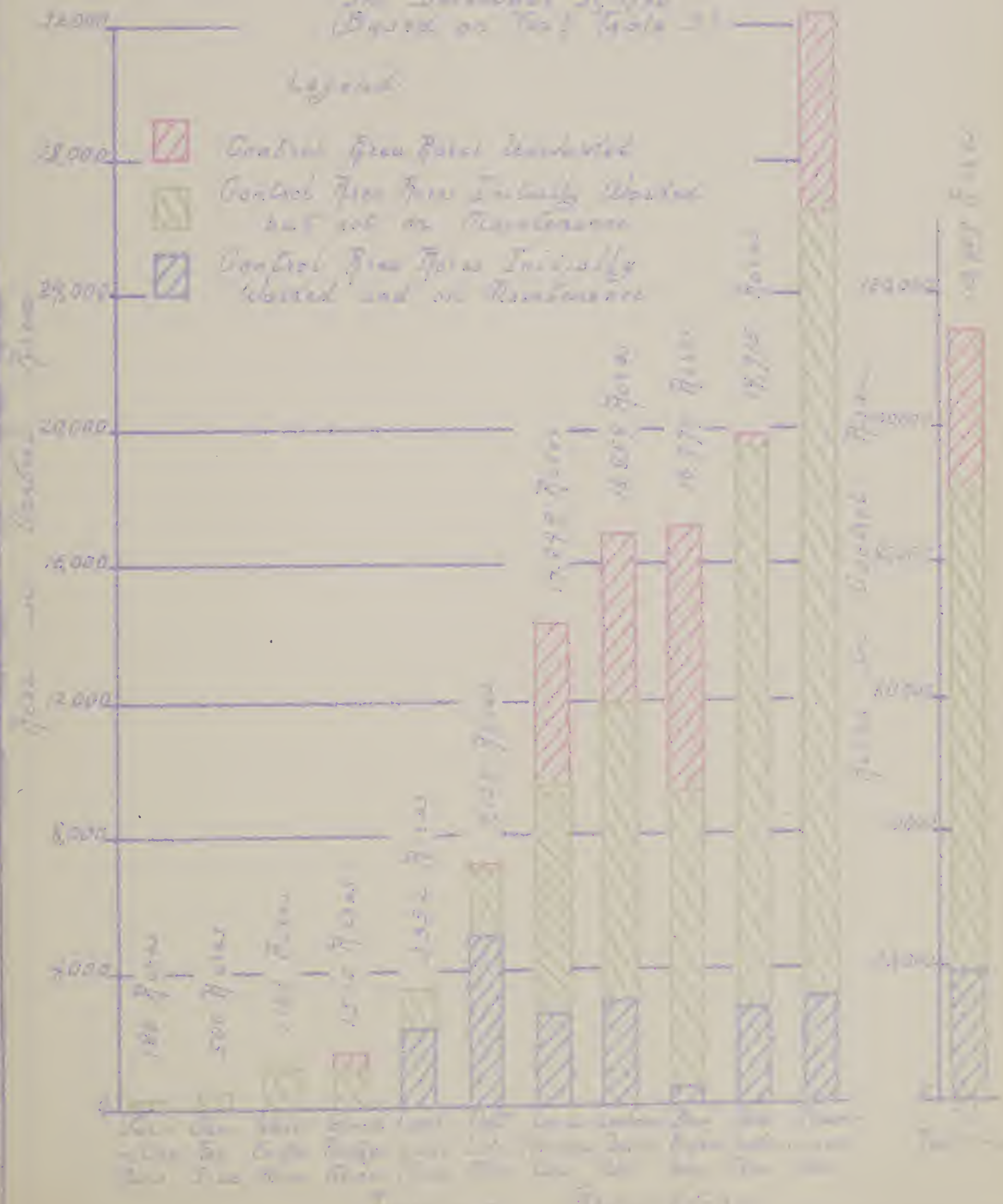
























Table 2. (Cont'd) Summary of Local Control by States and Operating Agencies,  
North Central Region, 1946

County	Operating Agency	Index Area	Area White Pine Protected		Area Worked	Blind-Clare Destroyed	Total
			Actual	Planned (Total)			
III. Workings							
Alameda	Alameda State	109	13,124	7,589	13,067	739,302	8,100
	Alameda State	109	2,773	115	7,533	163,500	200
	Alameda State	109	5,125	2,989	20,300	250,000	3,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,000	1,000
Alameda	Alameda State	109	1,100	100	1,000	1,000	1,000
	Alameda State	109	1,100	100	1,000	1,00	





Table 24. (Cont'd) Summary of Local Control by States and Ownership Classes, North Central Region, 1946

State	Ownership Class	Forest	Number Acres	Acres White Pine Protected		Acres Worked	Number Pines Destroyed	Value
				Actual	Planted			
Minnesota	State and Private	State-Prod. Public	3	22,214	393	87,015	157,699	1,124
		Private	12	176	89	1,647	68,133	538
	Forest Service	Chauquignon N.F.	3	188	20	514	2,329	10
		St. Louis N. P.	2	72	-	170	6,082	103
	Indian Service	Bad River	3	366	-	424	185,132	100
		Lee County Gravelles	11	1,511	13	2,155	92,638	105
	Forest Service	Lee Co. P. N.	6	1,732	-	2,903	74,429	105
		Ironwood	3	275	-	526	14,187	201
	Totals							
Michigan	State and Private	State-Prod. Public	62	23,087	1,620	13,950	381,192	1,725
		Private	183	2,994	2,835	25,880	399,712	1,452
	Forest Service	Ironwood	24	2,011	-	3,215	12,304	100
		Ironwood	24	2,011	-	3,215	12,304	100
Indiana	Forest Service	Ironwood	24	2,011	-	3,215	12,304	100
		Ironwood	24	2,011	-	3,215	12,304	100
Totals			281	98,309	37,134	2,313,386	11,880	

(Cont'd)





Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1946

State	Ownership Class	Forest	Number Acres Served	Acres Working	Acres Natural	White Pine Planted	Acres Protected Total	Acres Worked	Number Bires Destroyed	Total Bires Destroyed
Minnesota	State and Private	Gov-Pub. Private	19	2,510	2,145	4,655	9,855	154,932	1,437	1,437
		Private	80	7,085	170	7,255	24,078	448,076	4,207	4,207
	Forest Service	Chaguanong N. P.	6	5,029	1,005	6,035	0,957	126,702	126,702	2,223
		Nicolet N. P.	14	2,145	1,172	3,310	6,840	67,017	67,017	751
	Total		109	9,769	3,317	13,086	17,672	248,666	248,666	3,181
Illinois	State and Private	Gov-Pub. Private	1	213	-	213	213	12,100	12,100	127
		Private	3	210	-	210	408	26,114	26,114	178
	Forest Service	Laurel N. P.	9	1,640	247	1,887	3,335	113,345	113,345	1,742
		Private	13	2,038	207	2,245	1,300	181,200	181,200	2,011
	Total		26	3,891	454	4,345	5,053	322,559	322,559	3,966
Indiana	State and Private	Gov-Pub. Private	77	5,970	5,625	11,595	26,134	250,103	250,103	2,122
		Private	337	19,106	1,704	20,810	73,108	1,040,679	1,040,679	8,042
	Forest Service	Gov-Pub. Private	63	10,181	1,133	11,314	27,283	151,102	151,102	1,111
		Private	15	2,437	207	2,644	1,579	270,000	270,000	2,123
	Total		162	22,194	2,064	24,258	102,004	1,471,884	1,471,884	11,356

(Cont'd)

Table 2a. (Cont'd) Summary of Land Control by States and Ownership Classes,  
North Central Region, 1946

State	Ownership Class	Forest	Number Acres		Acres White Pine Protected		Acres Worked	Number Roses Destroyed	Total Bl-Gr-ow Used
			State	Private	Natural	Planted			
Illinois	State and Private	Non-Fed. Public	5	-	62	62	812	63,493	399
		Private	2	-	65	65	213	2,110	30
	State Total		7	-	127	127	1,025	65,603	429
Indiana	State and Private	Non-Fed. Public	1	61	61	61	330	953	7
		Private	10	102	162	162	1,746	3,998	23
	State Total		11	163	223	223	2,076	4,951	30
Iowa	State and Private	Non-Fed. Public	1	11	11	11	58	1,792	45
		Private	3	27	27	27	342	22,578	190
	State Total		4	38	38	38	400	24,370	235
Ohio	State and Private	Non-Fed. Public	1	420	1,189	1,189	2,428	3,684	84
		Private	4	854	873	873	3,931	7,079	118
	State Total		5	1,274	1,062	1,062	6,359	10,763	202
Michigan	State and Private	Non-Fed. Public	10	1,162	2,406	2,406	6,471	30,841	279
		Private	45	4,392	247	247	15,102	179,256	1,705
	State Total		55	5,554	2,653	2,653	21,573	210,097	1,984
Forest Service		Bureau N. F.	1	8	8	8	128	464	5
		Manistow N. F.	7	50	468	468	2,231	1,829	28
		Marquette N. F.	1	310	310	310	660	3,494	91
		Hiamatha N. F.	1	412	412	412	810	3,733	115
		Ottawa N. F.	10	1,267	1,747	1,747	3,159	42,056	972
	State Total		20	2,037	4,945	4,945	8,586	51,576	1,110
	Sub-Total		77	7,201	11,132	11,132	29,341	251,473	3,113
Minnesota	State and Private	Non-Fed. Public	7	2,316	179	2,195	2,982	71,038	703
		Private	2	8	107	115	405	18,819	173
	State Total		9	2,324	286	2,610	3,387	89,857	876
Forest Service		Superior N. F.	4	-	59	59	138	16,947	223
		Chippewa N. F.	3	269	-	269	357	14,787	92
	State Total		7	269	59	328	495	31,734	315

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1946

State	Ownership Class	Forest	Number Acres	Acres White Pine Planted	Acres Protected Total	Acres Worked	Number Ribes Destroyed	Total Acres Non-Deer Owned
Minnesota	Indian Service	Tremillion	9	70	70	186	11,393	183
		Red Lake	4	1,164	1,164	1,330	168	51
		Leech Lake	1	79	79	90	25,615	131
		<b>Total</b>	<b>14</b>	<b>1,313</b>	<b>1,313</b>	<b>2,606</b>	<b>21,376</b>	<b>265</b>
Wisconsin	State and Private	Non-Pub. Public	2	69	69	890	7,076	90
		Private	23	1,502	1,524	6,657	66,044	656
		<b>Total</b>	<b>25</b>	<b>1,571</b>	<b>1,593</b>	<b>7,547</b>	<b>73,120</b>	<b>746</b>
		<b>Total Service</b>	<b>27</b>	<b>1,640</b>	<b>1,662</b>	<b>8,437</b>	<b>80,240</b>	<b>846</b>
Michigan	Forest Service	Chequamegon N. F.	3	68	68	849	7,225	892
		Alcochet N. F.	2	210	450	820	13,787	244
		<b>Total</b>	<b>5</b>	<b>278</b>	<b>518</b>	<b>1,669</b>	<b>21,012</b>	<b>336</b>
		<b>Total Service</b>	<b>5</b>	<b>278</b>	<b>518</b>	<b>1,669</b>	<b>21,012</b>	<b>336</b>
Michigan	Indian Service	Red River	2	1,082	1,082	1,838	182,658	702
		Lea Court Orelline	3	145	145	905	4,032	162
		Scandinavia	1	150	150	280	13,947	258
		<b>Total</b>	<b>6</b>	<b>1,377</b>	<b>1,377</b>	<b>2,023</b>	<b>199,637</b>	<b>1,022</b>
Michigan	State and Private	Non-Pub. Public	27	6,099	7,503	13,951	178,677	1,807
		Private	89	6,885	7,405	28,395	299,924	2,963
		<b>Total</b>	<b>116</b>	<b>12,984</b>	<b>14,908</b>	<b>42,346</b>	<b>478,601</b>	<b>4,770</b>
		<b>Total Service</b>	<b>116</b>	<b>12,984</b>	<b>14,908</b>	<b>42,346</b>	<b>478,601</b>	<b>4,770</b>
Michigan	Forest Service	All Forests	22	2,224	4,190	9,182	104,882	1,881
		Indian Service	13	7,689	8,559	1,852	213,321	1,242
		<b>Total</b>	<b>35</b>	<b>9,913</b>	<b>12,749</b>	<b>11,034</b>	<b>318,203</b>	<b>3,123</b>
		<b>Total Service</b>	<b>35</b>	<b>9,913</b>	<b>12,749</b>	<b>11,034</b>	<b>318,203</b>	<b>3,123</b>
<b>Total</b>		<b>Total</b>	<b>163</b>	<b>18,311</b>	<b>31,777</b>	<b>96,328</b>	<b>900,886</b>	<b>7,026</b>

(Cont'd)



Table 24. (Cont'd) Summary of Local Control by States and Township Classes,  
North Central Region, 1945

State	Ownership Class	Forest	Number Acres	Acres White Pine Protected		Acres Marked	Number Ribes Destroyed	Total Billion Man-Days Used
				Natural	Planted			
All Holdings								
Illinois	State and Private	Non-Fed. Public	5	-	92	992	64,110	445
		Private	6	-	83	307	15,975	103
State Total			11	-	175	1,299	80,085	548
Indiana	State and Private	Non-Fed. Public	10	61	667	9,733	1,601	3
		Private	81	189	2,150	14,369	9,088	63
State Total			91	250	2,817	24,102	10,689	66
Iowa	State and Private	Non-Fed. Public	7	11	44	322	13,734	116
		Private	107	232	73	3,003	268,852	2,137
State Total			114	243	117	3,325	282,586	2,253
Missouri	State and Private	Non-Fed. Public	13	620	1,742	5,293	15,207	352
		Private	7	1,144	39	4,859	11,876	292
State Total			20	1,764	1,781	10,152	27,083	644
Nebraska	State and Private	Non-Fed. Public	51	1,933	3,005	17,077	97,312	100
		Private	232	18,676	2,376	71,925	771,279	6,221
State Total			283	19,609	5,381	89,002	868,591	6,321
Forest Service	Forest Service	Huron N. F.	2	13	500	920	2,330	19
		Manistee N. F.	11	50	1,074	3,598	2,143	43
		Marquette N. F.	12	1,448	40	4,563	40,282	670
		Hiawatha N. F.	12	1,201	8	3,520	26,538	544
		Ottawa N. F.	34	3,322	1,660	6,978	267,180	2,753
		Sub Total	59	6,036	1,682	21,979	335,673	3,535
State Total			109	16,645	5,063	102,981	1,207,444	13,104
Minnesota	State and Private	Non-Fed. Public	30	3,934	377	8,598	301,971	3,321
		Private	3	11	107	129	22,144	207
State Total			33	4,045	484	8,727	324,115	3,528

(Cont'd)



Table 2A. (Cont'd) Summary of Local Control by States and Ownership Classes,  
North Central Region, 1946

State	Ownership Class	Forest	Bomber Areas	Acres White Pine Protected	Acres Worked	Number White Pine Destroyed
Minnesota	Forest Service	Superior N. P.	13	706	925	177,582
		Chippewa N. P.	11	622	784	103,520
	Indian Service	<b>All Workings (Cont'd)</b>				
		Grand Portage	1	215	215	330,353
		Beet Lake	1	22	52	11,358
		Sed Lake	5	1,327	1,327	109,655
		Verebition	2	78	78	11,373
		Leach Lake	3	318	313	152,841
		<b>Sub-Total</b>	<b>18</b>	<b>1,863</b>	<b>1,823</b>	<b>1,003,140</b>
		<b>Total</b>	<b>31</b>	<b>8,293</b>	<b>17,029</b>	<b>3,197,701</b>
Wisconsin	State and Private	Keweenaw N. P.	24	26,795	27,029	319,701
		Private	123	8,763	9,044	582,294
	Forest Service	<b>All Workings (Cont'd)</b>				
		Chippewa N. P.	12	5,385	5,386	130,230
		Misoleet N. P.	18	2,428	3,040	88,288
	Indian Service	<b>Sub-Total</b>	<b>30</b>	<b>7,813</b>	<b>8,426</b>	<b>218,518</b>
		Red River	3	4,369	4,369	100,000
		La Crosse Ojibwas	15	1,874	3,727	109,070
		La Crosse Flambeau	9	1,972	3,311	100,543
		Unassigned	13	8,005	4,395	111,774
Region	State and Private	<b>All Workings (Cont'd)</b>				
		Keweenaw N. P.	146	33,202	33,195	809,312
		Private	603	88,985	91,094	1,648,315
	Forest Service	<b>All Forests</b>				
		Indian Service				
		<b>All Forests</b>				
		<b>Sub-Total</b>	<b>751</b>	<b>122,187</b>	<b>124,289</b>	<b>2,457,627</b>
		<b>Total</b>	<b>1,076</b>	<b>1,076</b>	<b>1,076</b>	<b>1,076</b>

Table 3.- Summary of Local Control by Ownership Classes and Operating Agencies, North Central Region, 1945

Ownership Class	Operating Agency	Number Acres	Acres White Pine Protected	Acres Forested	Number Timber Destroyed	Total 8-Year Stand-By's Used
Non-Federal Public	Bureau-State	37	Initial Working	72,821	265,976	1,226
	Bureau-Intermingled	5	25,985	1,129	115,156	1,737
	Bureau-State	181	846	25,445	320,881	2,584
	Bureau-Intermingled	2	5,785	435	18,831	68
Total		225	33,601	100,830	760,864	3,675
Forest Service	Bureau-State	3	53	425	-	-
	Bureau-Intermingled	2	45	118	78,201	251
	Forest Service	25	2,026	4,945	156,797	1,764
Total		30	2,124	5,488	235,198	2,015
Indian Service		2	4,217	2,333	1,412,138	2,015
All Agencies		241	57,738	112,866	2,416,300	2,230
Non-Federal Public	Bureau-State	75	Second Working	25,377	276,958	2,618
	Bureau-Intermingled	2	430	757	13,145	232
	Bureau-State	322	18,712	67,681	1,003,810	8,319
	Bureau-Intermingled	15	2,038	5,427	44,889	511
Total		414	21,177	79,242	1,348,802	11,680
Forest Service	Bureau-Intermingled	12	4,942	7,540	71,985	1,436
	Forest Service	51	9,982	20,021	355,381	4,416
	Total	63	14,924	27,561	427,366	5,852
Indian Service		15	2,386	4,076	271,025	3,402
All Agencies		132	40,719	131,682	2,074,275	19,948

(Cont'd)



Table 5. (Cont'd) Summary of Local Control by Ownership Classes and Operating Agencies,  
North Central Region, 1946

Ownership Class	Operating Agency	Number Acres	Acres With Plans Protected	Acres Worked	Number Cows Destroyed	Total Cows Owned
Non-Federal Public Private	Bureau-State	27	7,543	13,953	176,677	1,607
	Bureau-State	85	7,120	27,056	288,560	2,786
	Bur.-Inland/Inland	3	205	1,300	31,564	110
	Total	115	14,868	42,309	496,741	4,503
Forest Service	Forest Service	3	3,171	1,128	13,507	3,200
Indian Service	Indian Service	11	2,322	1,700	21,207	1,200
All Governmental	All Agencies	118	11,077	45,137	531,455	7,003
Non-Federal Public Private	Bureau-State	133	12,173	118,119	721,611	6,051
	Bur.-Inland/Inland	7	1,276	1,886	128,301	1,342
	Bureau-State	509	31,617	120,222	1,593,251	13,125
	Bur.-Inland/Inland	20	2,177	7,162	95,064	720
Forest Service	Bureau-State	3	30	1,000	1,300	1,100
	Bur.-Inland/Inland	16	1,967	7,468	150,187	1,607
	Forest Service	108	16,533	34,118	644,640	8,207
	Total	126	18,570	42,586	797,131	11,960
Indian Service	Indian Service	3	300	1,000	1,000	1,000
All Governmental	All Agencies	131	18,870	47,594	802,261	12,960

Table 4- Distribution of Timber Allowance by Class and Ownership Class  
 North Central Section, 1946

Classification of Forested Acres on Basis of Allowance F.L.F. per acre									
Including Allowance									
Ownership Class	Number of Acres	Acres Forested	Step Acres	Timber Total		Timber Pay Rate		0.0-15.0 F.L.F.	
				F.L.F.	Value	F.L.F.	Value	Acres	Value
Gov-Pub. Public	6	792	24.00	204.5	3.0	11.0	642	300	-
Private	3	182	14.00	6.2	0.1	0.5	122	-	-
Total	9	974	38.00	210.7	3.1	1.5	764	300	-
Gov-Pri. Public	1	240	2.00	8.0	1.5	4.0	330	-	-
Private	5	1,345	17.10	15.0	1.3	2.6	1,345	-	-
Total	6	1,585	19.10	23.0	1.3	2.1	1,675	-	-
Gov-Pub. Public	7	902	12.50	130.5	14.0	15.9	231	303	-
Private	107	3,003	20.10	345.0	11.2	11.0	2,660	371	-
Total	114	3,905	32.60	475.5	11.6	14.4	2,891	674	-
Gov-Pri. Public	2	1,702	25.20	105.0	4.1	10.7	3,002	604	136
Private	7	1,695	20.20	130.0	3.6	12.1	4,316	-	296
Total	9	3,397	45.40	235.0	4.1	13.5	7,318	604	432
Forest Service	71	21,379	300.50	775.5	1.6	3.5	30,803	1,000	-
Gov-Pub. Public	51	16,446	307.50	359.0	0.6	0.9	16,516	205	-
Private	202	72,353	1,604.70	3,591.0	1.9	3.3	70,629	1,817	113
Total	123	88,732	1,912.20	4,376.5	1.3	2.3	87,638	3,040	113
Forest Service	19	1,009	10.00	290.3	3.1	6.0	1,606	117	112
Indian Service	12	2,511	35.10	310.3	1.6	6.1	2,601	-	130
Gov-Pri. Public	29	7,925	108.10	122.1	2.3	3.9	7,335	-	-
Private	1	297	3.00	3.1	0.3	0.0	297	-	-
Total	31	12,022	146.10	1,225.8	2.1	6.3	12,539	117	242

(Continued)









Tables 6 and 7: Status of Control by Skates and Operating Classes,  
North Central Region, December 31, 1966

Operating Class	Total Control Problem, Net Acres					Net Acres Initially Forfeited					Net Acres Not Initially Marked			Net Acres	
	Total					Total					Initially Marked			Total	
	Natural White Pine	Planted White Pine	Control Area	Control Area	Control Area	Natural White Pine	Planted White Pine	Control Area	Control Area	Control Area	Natural White Pine	Planted White Pine	Control Area	Control Area	Control Area
<b>Table 6: Public</b>															
Non-Prod. Public	197	1,025	1,222	1,797	1,797	197	1,025	1,222	1,797	1,797	197	1,025	1,222	1,797	1,797
Private	34	847	881	17,097	17,097	34	847	881	17,097	17,097	34	847	881	17,097	17,097
<b>Table 7: Public</b>															
Non-Prod. Public	59	2,501	2,560	17,145	17,145	59	2,501	2,560	17,145	17,145	59	2,501	2,560	17,145	17,145
Private	224	6,126	6,350	170,993	170,993	224	6,126	6,350	170,993	170,993	224	6,126	6,350	170,993	170,993
<b>Table 8: Public</b>															
Non-Prod. Public	347	1,014	1,361	5,152	5,152	347	1,014	1,361	5,152	5,152	347	1,014	1,361	5,152	5,152
Private	304	1,014	1,318	5,152	5,152	304	1,014	1,318	5,152	5,152	304	1,014	1,318	5,152	5,152
<b>Table 9: Public</b>															
Non-Prod. Public	906	3,722	4,628	17,145	17,145	906	3,722	4,628	17,145	17,145	906	3,722	4,628	17,145	17,145
Private	2,258	10,773	13,031	422,038	422,038	2,258	10,773	13,031	422,038	422,038	2,258	10,773	13,031	422,038	422,038
<b>Table 10: Public</b>															
Non-Prod. Public	25,223	20,110	45,333	150,718	150,718	25,223	20,110	45,333	150,718	150,718	25,223	20,110	45,333	150,718	150,718
Private	15	15	15	150	150	15	15	15	150	150	15	15	15	150	150
Non-Prod. Public	102,115	11,134	113,249	322,798	322,798	102,115	11,134	113,249	322,798	322,798	102,115	11,134	113,249	322,798	322,798
Private	51,121	17,520	68,641	195,844	195,844	51,121	17,520	68,641	195,844	195,844	51,121	17,520	68,641	195,844	195,844





Table B. Summary of Local Control by District, Workings, and Ownership Classes,  
From Inception to December 31, 1946. North Central Region  
Gross Acres

State	Ownership Class	Gross Acres Under Protection	Gross Acres Worked	Number of Slices Destroyed	Total 5-Year Work-Days	Average Per Slice Worked		Average Per Slicing Machine Per Year
						Total	Per Slice	
Illinois								
1933-1946	Forest Service	1	50	0	0	0	0	0
	Non-Federal Public Private	2,553 752	8,464 11,216	1,126,290 360,115	2,792 1,095	133.2 32.1	0.35 0.09	404 352
Indiana								
1933-1946	Non-Federal Public Private	1,924 6,129	16,107 67,063	107,247 249,421	957 2,866	6.5 4.5	0.05 0.04	104 104
	Iowa							
1933-1946	Forest Service	45	500	13,762	188	36.9	0.30	30
	Non-Federal Public Private	500 2,683	3,916 53,905	622,677 2,835,922	5,766 20,556	199.0 33.4	1.47 0.60	108 104
Missouri								
1933-1946	Forest Service	200	1,875	56	13	5.00	0.01	4
	Non-Federal Public Private	4,166 10,482	40,092 156,719	505,556 2,014,580	8,107 24,359	12.6 12.9	0.20 0.16	62 62
Nebraska								
1933-1946	Forest Service	36,637	151,106	5,712,776	37,760	37.9	0.20	148
	Nat. Park Service Non-Federal Public Private	15 136,873	120 414,570	13 21,030,431	0 29,976	0.1 50.7	- 0.22	- 205
Oklahoma								
1933-1946	Forest Service	34,391	76,773	9,090,112	38,431	115.4	0.50	136
	Non-Federal Public Private	21,466 39,757	53,301 85,131	10,193,293 10,677,474	19,182 38,689	106.5 125.4	0.56 0.45	539 274
Texas								
1933-1946	Forest Service	70,063	219,072	31,096,214	63,508	141.8	0.29	148

(Continued)





Table 8. (Cont'd) Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1946, North Central Region  
Gross Acres

State	Ownership Class	Gross Acres		Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per Acre Worked		Average No. Ribes Destroyed Per Man-Day
		White Pine Protected	Gross Acres Worked			Ribes	Man-Days	
Michigan 1932-1946	Forest Service	23,077	52,945	960,936	9,437	18.1	0.18	102
	Non-Federal Public	40,140	107,020	2,390,811	15,192	22.3	0.14	157
	Private	77,286	221,446	4,515,071	27,588	20.4	0.12	164
	Total	140,503	381,411	7,866,818	52,217	20.6	0.14	153
Minnesota 1933-1946	Forest Service	15,134	24,364	1,352,787	10,417	55.5	0.43	130
	Indian Service	14,414	20,024	2,210,641	9,897	110.4	0.49	223
	Non-Federal Public	11,479	18,661	1,155,912	7,038	61.9	0.38	164
	Private	14,015	45,766	2,701,530	11,549	59.0	0.25	234
Total		54,642	108,815	7,420,870	38,901	61.4	0.38	191
Wisconsin 1934-1946	Forest Service	19,313	35,193	798,606	9,289	22.7	0.26	85
	Indian Service	16,084	32,188	2,962,670	18,574	92.4	0.58	160
	Non-Federal Public	34,498	80,632	1,162,168	9,777	14.4	0.12	119
	Private	63,577	218,174	5,384,356	29,348	15.5	0.13	115
Total		133,472	356,177	10,307,800	66,988	28.7	0.28	129
Region 1932-1946	Forest Service	57,524	112,502	3,112,329	29,123	27.7	0.26	107
	Indian Service	30,508	52,418	5,176,903	28,528	98.8	0.54	181
	Non-Federal Public	91,655	240,157	5,852,623	43,349	24.4	0.18	135
	Private	159,796	522,088	11,356,255	76,692	21.8	0.15	118
Total		339,483	927,165	25,498,110	177,692	57.3	0.28	133
Illinois 1940-1946	Non-Federal Public	1,904	7,669	459,360	2,868	59.8	0.37	160
	Private	344	4,923	74,289	659	15.1	0.13	116
	Total	2,248	12,592	533,649	3,527	37.4	0.25	138
	Third and Other Workings							

(Continued)



Table B. (Cont'd) Summary of Total Control by States, Territories, and Possessing Classes,  
From Inception to December 31, 1945, North Central Region

Gross Acres

State	Ownership Class	Gross Acres White Pine Protected	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average Per Acres Worked		Average 80 Ribes Destroyed Per acre-yr
						Ribes	Man-Days	
Third and Other Workings (Cont'd)								
Indiana 1941-1945	Non-Federal Public	435	2,730	12,931	183	4.7	0.07	71
	Private	182	2,245	5,026	29	2.2	0.01	173
<hr/>								
Total 1940-1945	Non-Federal Public	241	133	19,425	694	108.4	0.33	100
	Private	27	342	22,576	190	66.0	0.56	119
<hr/>								
Ohio 1940-1945	Non-Federal Public	1,231	3,762	5,137	283	1.6	0.07	22
	Private	1,632	9,572	155,098	2,035	16.2	0.21	76
<hr/>								
Michigan 1937-1945	Forest Service	4,468	10,028	111,403	1,762	11.1	0.18	63
	Non-Federal Public	8,142	18,563	254,250	1,931	13.7	0.10	182
	Private	10,757	53,052	561,053	4,444	17.0	0.13	13
<hr/>								
Minnesota 1937-1945	Forest Service	4,371	8,094	238,351	1,958	32.1	0.24	131
	Indian Service	2,017	3,512	299,207	2,036	85.2	0.60	143
	Non-Federal Public	4,268	5,378	296,874	2,634	55.2	0.39	104
	Private	235	817	34,820	281	41.1	0.33	121
<hr/>								
Wisconsin 1938-1945	Forest Service	1,894	2,933	47,343	1,108	16.2	0.38	43
	Indian Service	2,308	4,814	276,899	2,226	57.5	0.46	121
	Non-Federal Public	157	890	7,076	90	8.0	0.10	79
	Private	4,886	15,012	103,962	976	6.9	0.07	107
<hr/>								
Region 1937-1945	Forest Service	10,733	21,021	417,499	4,838	19.9	0.23	86
	Indian Service	4,325	8,326	576,106	4,322	69.2	0.52	133
	Non-Federal Public	16,418	39,725	1,115,053	8,110	28.1	0.20	137
	Private	18,623	65,993	956,826	8,594	14.5	0.13	113

Total	50,000	105,065	3,303,444	25,834	23,7	8.19	0.19	125
-------	--------	---------	-----------	--------	------	------	------	-----

(Cont'd)



Table B. (Cont'd.) Summary of Local Control by States, Workings, and Ownership Classes,  
From Inception to December 31, 1945, North Central Region  
Gross Acres

State	Ownership Class	Gross Acres White Pine Protected	Gross Acres Worked	Number of Hilas Destroyed	Total E-Day Work-Days	Average Per		Average no. Hilas Destroyed per Man-Day
						Hilas	Man-Days	
All Workings								
Illinois 1932-1946	Forest Service	1	50	0	0	0	-	-
	Non-Federal Public Private	6,338 1,978	23,227 19,218	2,145,187 483,909	7,809 2,026	22.4 25.2	0.34 0.11	275 239
Indiana 1933-1946	Non-Federal Public Private	3,935 7,064	26,757 77,932	137,835 350,514	1,344 3,504	5.2 4.5	0.05 0.05	105 90
	Indian Service	55	706	17,054	226	21.2	0.32	75
Iowa 1933-1946	Non-Federal Public Private	1,078 3,371	6,131 39,091	946,274 3,153,816	8,211 23,263	154.3 80.8	1.34 0.60	115 136
	Forest Service	920	1,875	55	13	Trace	0.01	4
Missouri 1933-1945	Non-Federal Public Private	7,329 14,377	61,532 185,526	833,069 2,529,085	15,654 31,032	13.5 13.6	0.25 0.17	53 61
	Forest Service	25,132	214,099	6,795,117	40,979	32.7	0.19	185
Michigan 1933-1946	Nat. Park Service	15	120	13	-	0.1	-	-
	Non-Federal Public Private	185,247 322,323	540,153 981,941	23,675,552 43,285,524	106,499 190,288	43.8 44.1	0.20 0.19	222 227
Minnesota 1917-1946	Forest Service	37,895	109,191	16,701,450	56,835	98.0	0.47	211
	Indian Service	37,697	56,837	12,709,141	31,145	223.6	0.55	408
Non-Federal Public Private		55,504 84,397	109,170 265,685	12,130,260 33,792,564	47,771 75,438	111.1 127.2	0.44 0.28	254 143
	Forest Service	49,053	104,723	5,720,917	40,757	54.6	0.39	112
Wisconsin 1920-1946	Indian Service	52,429	101,820	23,232,125	84,215	228.7	0.05	276
	Non-Federal Public Private	121,698 277,445	323,225 1,023,515	12,341,599 53,632,193	56,521 247,763	37.6 52.6	0.17 0.26	217 217

(Continued)

Table 5. (Cont'd) Summary of Land Control by Estate, Holdings, and Ownership Classes,  
From Inception to December 31, 1946, North Central Region  
Grass Area

State	Ownership Class	Grass Acres White Pine Protected	Grass Acres Worked	Number of Ribes Destroyed	Total 6-Hour Man-Days	Average Per Acres Worked		Average No. Ribes Destroyed Per Man-Day
						Ribes	Man-Days	
Utah 1917-1946	Forest Service	169,312	425,908	23,217,340	132,585	54.0	0.51	175
	Indian Service	90,381	199,363	36,000,620	115,586	226.0	0.75	315
	Nat. Park Service	15	120	13	0	0.1	-	-
	Non-Federal Public Private	301,329 711,753	1,095,195 2,993,908	52,209,776 137,282,645	244,239 573,404	47.7 52.9	0.22 0.22	214 299
Utah Total, All Holdings		561,039	1,719,394	117,507,384	1,065,414	98.4	0.25	197



Table 5A. Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1945, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average Per Ribes Destroyed	
					Man-Days	Per Man-Day
<u>Illinois</u>						
Forest Service	Bureau-State			0	0	0
Non-Federal Public	Bureau-State	5,277	3,214	3,214	2.4	2.4
Private	Bureau-State	2,711	2,528	2,528	2.4	2.4
<u>Total, Illinois</u>						
		7,988	5,742	5,742	2.4	2.4
<u>Indiana</u>						
Non-Federal Public	Bureau-State	10,100	2,078	1,039	2.4	2.4
Private	Bureau-State	11,228	2,528	2,528	2.4	2.4
<u>Total, Indiana</u>						
		21,328	4,606	3,567	2.4	2.4
<u>Iowa</u>						
Indian Service	Indian Service					
Non-Federal Public	Bureau-State	2,251	2,251	2,251	2.4	2.4
Private	Bureau-State	12,211	1,221	1,221	2.4	2.4
<u>Total, Iowa</u>						
		14,462	3,472	3,472	2.4	2.4
<u>Missouri</u>						
Forest Service	Bureau-State	1,000	1,000	1,000	2.4	2.4
Non-Federal Public	Bureau-State	1,000	1,000	1,000	2.4	2.4
Private	Bureau-State	1,000	1,000	1,000	2.4	2.4
<u>Total, Missouri</u>						
		3,000	3,000	3,000	2.4	2.4
<u>Nebraska</u>						
Forest Service	Bureau-State	1,000	1,000	1,000	2.4	2.4
Non-Federal Public	Bureau-State	1,000	1,000	1,000	2.4	2.4
Private	Bureau-State	1,000	1,000	1,000	2.4	2.4
<u>Total, Nebraska</u>						
		3,000	3,000	3,000	2.4	2.4
<u>North Dakota</u>						
Forest Service	Bureau-State	1,000	1,000	1,000	2.4	2.4
Non-Federal Public	Bureau-State	1,000	1,000	1,000	2.4	2.4
Private	Bureau-State	1,000	1,000	1,000	2.4	2.4
<u>Total, North Dakota</u>						
		3,000	3,000	3,000	2.4	2.4
<u>South Dakota</u>						
Forest Service	Bureau-State	1,000	1,000	1,000	2.4	2.4
Non-Federal Public	Bureau-State	1,000	1,000	1,000	2.4	2.4
Private	Bureau-State	1,000	1,000	1,000	2.4	2.4
<u>Total, South Dakota</u>						
		3,000	3,000	3,000	2.4	2.4
<u>Wyoming</u>						
Forest Service	Bureau-State	1,000	1,000	1,000	2.4	2.4
Non-Federal Public	Bureau-State	1,000	1,000	1,000	2.4	2.4
Private	Bureau-State	1,000	1,000	1,000	2.4	2.4
<u>Total, Wyoming</u>						
		3,000	3,000	3,000	2.4	2.4

(Continued)





Table 8A. (Cont'd) Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1945, North Central Region  
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average Per Acre Worked		Average No. Ribes Destroyed Per Man-Day
					Ribes	Man-Days	
Wisconsin (Cont'd)							
Indian Service	Indian Service						
	Bureau-State	327,438	12,323,454	58,719	37.6	0.17	217
Non-Federal Public	Bureau-State	757	13,115	202	17.4	0.27	65
	Bureau-Intermediate						
Private	Bureau-State	1,022,713	33,336,638	147,502	32.5	0.24	217
	Bureau-Intermediate	602	15,545	221	19.4	0.28	70
Total, Wisconsin							
		1,350,803	45,825,152	148,442	31.8	0.26	
Forest Service	Bureau-State	1,000,000	3,137,197	13,774	34.5	0.13	271
	Bureau-Intermediate	7,658	150,187	2,687	19.6	0.22	89
Indian Service	Forest Service	313,809	19,329,856	117,124	61.6	0.37	165
Indian Service	Bureau-State	3,389	947,939	1,179	106.3	0.36	256
	Indian Service	154,074	35,859,151	114,407	220.5	0.73	312
U.S. Park Service	Bureau-State						
	Bureau-State						
Non-Federal Public	Bureau-State	1,093,303	52,081,475	202,198	67.6	0.22	215
	Bureau-Intermediate	1,895	128,308	1,941	68.0	1.03	68
Private	Bureau-State	2,595,901	137,183,082	572,699	53.0	0.22	200
	Bureau-Intermediate	7,162	95,064	720	13.3	0.10	132
	Forest Service	245	7,302	25	8.9	0.03	300
Total, Wisconsin							
		4,997,005	189,744,117	728,046	38.1	0.47	

(Cont'd)

Table 22. (Contd.) Summary of labor application, all findings, by States, Domestication  
and Domestication Agreements, 1917 to 1946, North American Region  
Over Area

Country Name	Operating Agency	Acres Irrigated	Number of Irrigated Acres	Total 6-hour Man-days Used	Average Per Irrigated Acres		Average No. Irrigated Acres Per Man-day
					Per Irrigated Acres	Man-day	
All countries	European-States	5,751,000	293,544,536	829,910	51.0	0.22	2.93
	State-Insured	18,706	777,592	4,349	28.1	0.26	3.85
	Private Service	314,654	19,577,925	127,169	61.5	0.37	1.68
	Public Service	176,070	23,649,153	714,607	208.5	0.73	3.12
Grand Total, North		6,241,426	347,471,206	1,656,026	55.1	0.25	3.98



Table 9. Summary of Forestry Sanitation, North Central Region, 1946

Name of Sanitary and Commodity	Operating Agency	Working	White Pine Trees in Sanitary	Number Birds Destroyed			Total
				Area Protected	Area Worked	Other	
<u>Illinois</u>							
State Forestry, State	State	State					
Trifurcated, State	Bureau-State	Fourth	1,207,000	34	320		
Trifurcated, State	Bureau-State	Second	2,271,500	32	300		
<u>Indiana</u>							
State Forestry, State	State	State					
Trifurcated, State	Bureau-State	Second					
<u>Mississippi</u>							
State Forestry, State	Bureau-State	State	600,000	20	375		
Trifurcated, State	Bureau-State	First	850,000	15	300		
State Forestry, U.S.F., U.S.F.	U.S.F.	Second	100,000		100		
<u>Alabama</u>							
State Forestry, State	State	State					
Trifurcated, State	Bureau-State	Fourth	1,207,000	34	320		
Trifurcated, State	Bureau-State	Second	2,271,500	32	300		
<u>Georgia</u>							
State Forestry, State	State	State					
Trifurcated, State	Bureau-State	Fourth	1,207,000	34	320		
Trifurcated, State	Bureau-State	Second	2,271,500	32	300		

Source: Summary of Forestry Sanitation, North Central Region, 1946

Table 10. Cultivated Black Currant Elimination, North Central Region, 1946

None Performed

Table 11. Cumulative Cultivated Black Currant Elimination,  
North Central Region to December 31, 1946

State	Number of Inspections	Found		Destroyed		Plantings Found per 1,000 Inspections
		Plantings	Plants	Plantings	Plants	
Illinois	48,067	572	4,171	60	76	11.7
Indiana	64,826	5	20	3	15	0.2
Iowa	318,396	1,606	7,274	1,590	7,186	5.0
Michigan	980,634	24,927	247,839	24,860	247,185	25.2
Minnesota	211,664	3,280	23,206	3,260	23,326	15.4
Ohio	1,015,970	8,830	73,605	8,606	73,117	4.8
Wisconsin	922,693	6,801	57,080	6,397	37,951	7.2
<b>Grand Total</b>	<b>4,001,083</b>	<b>35,769</b>	<b>388,475</b>	<b>61,777</b>	<b>306,621</b>	<b>12</b>





Appropriation	Eligible	Indian	Term	Other	Unassigned	Discretionary	Responsible	Unassigned	Office
Indian Affairs and Northern Development July to December	\$100.00	\$250.00	\$450.00	\$100.00	\$500.00	\$1,200.00	\$3,800.00	\$1,200.00	\$1,200.00
Indian Affairs and Northern Development July to December	300.00	250.00	450.00	400.00	800.00	1,200.00	3,700.00	1,200.00	1,200.00
Indian Affairs and Northern Development July to December	2,055.81	80.00	366.55	25.00	6,065.79	4,256.21	6,430.00	15,770.00	15,770.00
July to December	1,071.81	237.68	661.07	119.18	5,903.17	5,685.01	9,597.17	21,100.00	21,100.00
Indian Affairs and Northern Development	1,071.81	237.68	661.07	119.18	5,903.17	5,685.01	9,597.17	21,100.00	21,100.00
Indian Affairs and Northern Development	291.07	1,178.69	2,055.59	1,178.69	12,407.29	3,796.87	9,741.26	\$13,119.05	\$13,119.05
Indian Affairs and Northern Development	262.28	1,019.12	2,109.05	1,019.12	9,039.17	3,825.70	7,630.05	17,417.20	17,417.20
Indian Affairs and Northern Development	2,712.05	584.72	8,018.61	722.11	12,000.79	11,453.81	25,997.66	31,170.00	31,170.00
Indian Affairs and Northern Development	2,712.05	1,771.01	12,778.09	6,946.35	35,398.05	25,256.36	11,451.49	99,500.00	99,500.00
Indian Affairs and Northern Development	-	-	-	-	2,937.50	1,019.02	-	5,000.00	5,000.00
Indian Affairs and Northern Development	-	-	-	-	1,061.01	7,278.11	9,307.51	21,100.00	21,100.00
Indian Affairs and Northern Development	-	-	-	-	7,012.23	3,812.67	8,215.50	19,100.00	19,100.00
Indian Affairs and Northern Development	-	-	-	-	23,587.88	17,082.72	13,521.57	53,100.00	53,100.00
Indian Affairs and Northern Development	-	-	-	-	-	4,965.10	11,777.61	15,700.00	15,700.00
Indian Affairs and Northern Development	-	-	-	-	-	13,976.26	13,105.67	27,100.00	27,100.00

(Total)



Table 12a. (Cont'd) North Central Region Expenditures, by State and Appropriation, Calendar Year 1946

Expenditure	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Missouri	Total
Indian Service Field									
January to June	-	-	-	-	-	-	\$1,587.16	-	\$1,587.16
Indian Service Field									
July to December	-	-	-	-	-	-	3,075.95	-	3,075.95
Total									
Indian Service Field	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16
Indian Service Field	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95
Total	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11
Indian Service Field	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16	\$1,587.16
Indian Service Field	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95	\$3,075.95
Total	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11	\$4,663.11

1. Includes \$175.00 of Federal funds from Indian Reservation Trusts.  
 2. Includes \$21,120 of Federal funds from Indian Reservation Trusts for several projects.  
 3. Includes \$40,000 of Federal funds from Indian Reservation Trusts.  
 4. Includes \$100,000 of Federal funds from Indian Reservation Trusts for several projects.

Table 123. North Central Region Expenditures, Including Milwaukee Office Prorated to States on Basis of Total State Expenditures, Classified by State and Activity, Calendar Year 1946

Activity	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Region	Percent Each Activity
Leadership and Coordination	\$2,574.86	\$3,269.72	\$5,129.15	\$3,726.64	\$20,130.63	\$24,194.13	\$28,092.35	\$67,417.48	18.1
Local Control	4,300.05	1,900.87	22,686.70 <sup>a</sup>	7,270.79	88,842.13	85,430.51	119,280.74 <sup>b</sup>	329,712.79	69.1
Nursery									
Rehabilitation	28.94	23.12	353.10	-	-	347.23	828.80	1,561.19	0.4
Canker Pruning	-	-	203.86	-	1,316.36	869.31	-	2,389.53	0.6
Surveys	1,361.80	522.25	-	469.16	8,423.27	11,320.34	4,706.38	26,803.30	5.7
Other Field Data	3,128.91	54.53	731.89	109.06	5,969.99	10,897.02	8,351.37	29,212.77	6.2
Total	15,994.56	5,770.48	29,104.70	11,575.65	124,102.38	109,734.56	161,259.04	477,313.36	100.0

<sup>a</sup> Includes \$23.20 as value of cultivated Ribes Destroyed.

<sup>b</sup> Includes \$213.75 as value of cultivated Ribes Destroyed.



Table 12C. North Central Region Expenditures Classified by Appropriation and Activity, 1946

Source of Funds	Class of Expenditure	Leadership and Coordination	Local Control	Nursery Sanitation	Canker Pruning	Survey and Post-check	Other Field Data	Total	Personnel Budget of Funds
State and Private	Salaries	\$12,054.24	\$19,798.57	\$736.62	\$256.45	\$1,853.60	\$6,293.54	\$41,093.02	
	Non-Salaries	7,771.07	6,334.52	158.53	10.46	854.21	3,479.06	16,607.85	
Bureau 3101	Salaries	59,929.94	11,434.47	128.42	263.25	4,195.33	8,787.91	84,720.32	12
	Non-Salaries	7,622.23	1,106.76	46.11	53.64	829.39	1,858.77	11,826.50	
Bureau 3103, State and Private	Salaries	-	126,500.82	370.19	1,574.52	12,986.73	4,874.98	145,709.24	20
	Non-Salaries	-	17,529.90	16.20	103.77	3,818.63	1,860.60	23,328.70	
Bureau 3103, Interim	Salaries	-	27,228.06	-	75.00	1,133.50	540.75	29,007.31	35
	Non-Salaries	-	1,668.71	-	50.44	308.05	109.17	2,156.37	
Forest Service 3104	Salaries	-	65,807.83	65.32	-	180.00	180.00	66,033.95	5
	Non-Salaries	-	7,304.76	-	-	50.00	50.00	7,404.76	
Indian Service 3107 and Tribal	Salaries	-	47,606.20	-	-	572.96	1,090.08	49,270.24	15
	Non-Salaries	-	3,041.19	-	-	50.00	127.11	3,218.30	
Region	Salaries	72,021.18	294,405.95	1,360.35	2,171.22	20,923.12	21,713.26	412,635.08	17
	Non-Salaries	15,293.30	35,305.84	220.84	218.21	5,680.00	7,494.51	64,512.66	

a - Includes value of cultivated Ribes destroyed; \$213.75 from Wisconsin; \$23.80 from Iowa;

b - Includes Neomphes (Wisconsin) Tribal Fund; \$9,312.19 salaries; \$346.86 non-salaries; \$9,661.05 total.

Notes: In Government subletted camps in Minnesota, net wages (gross wages less board deductions of 40¢ per week) are shown as a salary item. Food supplies for camps, \$6,655.83, was also considered a salary item. Board deductions amounted to \$6,621.80.



Table 13. Approximate Number of Persons Employed by months and Agencies,  
North Central Region, 1946

Operating Agency	Number of Persons by Months												Average per Month
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Illinois													
State & Private	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Bureau 3103	1.0	1.0	1.0	1.4	2.2	9.4	9.0	4.2	-	1.0	1.0	1.0	32.2
Total	2.0	2.0	2.0	2.4	3.2	10.4	10.0	5.2	1.0	2.0	2.0	2.0	44.2
Indiana													
Bureau 3103	-	-	-	-	0.8	3.9	1.8	2.5	2.6	1.5	0.9	1.0	12.9
Iowa													
State & Private	-	-	-	-	-	-	1.0	-	-	-	1.0	-	2.0
Bureau 3101	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Bureau 3103	1.9	1.5	1.3	12.9	17.2	16.9	19.3	21.4	20.3	15.0	4.5	1.9	134.1
Total	2.9	2.5	2.3	13.9	18.2	17.9	20.3	22.4	21.3	16.0	6.5	2.9	148.1
Ohio													
Bureau 3101	1.5	1.5	1.5	1.5	1.5	1.5	1.0	1.0	1.0	1.0	1.0	1.0	15.0
Bureau 3103	-	-	-	-	-	2.4	3.4	9.5	10.6	3.0	3.1	2.0	34.0
Total	1.5	1.5	1.5	1.5	1.5	3.9	4.4	10.5	10.6	4.0	4.1	3.0	49.0
Michigan													
State & Private	2.0	3.0	3.0	3.0	3.0	14.5	8.0	6.7	2.0	2.0	1.5	-	48.7
Bureau 3101	4.0	4.1	5.0	5.0	5.0	24.5	4.0	4.0	4.0	4.0	4.0	4.0	71.6
Bureau 3103	2.5	1.6	2.2	7.5	41.0	33.3	62.3	81.1	52.4	26.5	8.9	4.0	323.3
F. S. 3104	-	1.0	1.0	1.0	6.2	30.4	68.4	63.5	2.0	2.0	1.5	-	177.0
Total	8.5	9.7	11.2	16.5	55.2	102.7	102.7	155.1	60.4	34.5	15.9	8.0	620.6
Minnesota													
State & Private	3.0	3.0	3.0	3.0	3.0	3.0	7.6	2.5	2.0	2.0	3.0	3.0	38.1
Bureau 3101	4.0	4.0	4.0	4.0	4.0	5.6	4.2	4.0	4.0	4.0	4.0	4.0	49.8
Bureau 3103	6.6	9.6	7.4	7.1	15.4	79.6	99.5	80.5	22.8	13.1	10.1	12.9	364.6
F. S. 3104	-	-	-	-	-	23.5	41.5	59.0	23.0	-	-	-	147.0
I. S. 3107	-	-	-	-	-	21.5	47.0	52.0	26.5	-	-	-	147.0
Total	13.6	16.6	14.4	14.1	22.4	121.2	199.8	173.9	78.1	19.1	17.1	29.9	746.5

(Cont'd)





Table 14. Current and Cumulative Summary of Canker Pruning.  
to December 31, 1946, North Central Region

State	Period of Time	Number Areas Treated	Number Trees Examined	Number Trees Treated	Number Trees Removed	Number Cankers Removed	Number Man Days Used
Iowa	1945 1946	7 14	8,914 12,588	197 94	273 127	934 200	12 14
Michigan	1933-1945 1946	300 46	703,675 72,890	36,515 2,931	291	94,837 6,631	3,072 137
Minnesota	1933-1945 1946	147 3	245,589 12,250*	15,197 4,543	1,349	40,097 5,270	1,151 106
Ohio	1941-1943 1946	4 "	1,305 "	43 "	13 "	125 "	15 "
Region	1933-1945 1946	438 63	979,483 97,728	53,912 7,568	1,926 127	135,993 12,101	4,250 257
Region Total		594	1,077,411	61,793	3,984	148,224	4,527

\* Includes 8,892 trees pruned silviculturally.



















































































